Puzzles of the Accident Investigators

THAT the block system is safer than the time-table and time-interval system of running trains, goes without saying; but it does not go far enough. Too many railroads or parts of railroads are managed by men who accept this fact in theory but do not heed it in practice. The block system is safer because of its simplicity; but in what does the simplicity consist? Some things are so simple that to impress them on the unreceptive mind it is necessary to build up a line of auxiliary argument in order to arouse the reasoning faculties, as is done in teaching the beautiful simplicities of geometry. The simplicity of the block system can sometimes be best set off by looking at the confusion which is inseparable from the other plan. This confusion is illustrated in a striking way by a recent collision. While the circumstances attending it have scarcely any element of novelty they may, nevertheless, be studied with profit. We have been studying the same kinds of facts for years; but there is need of keeping on, for we learn the lesson so poorly that we continue to kill people, because of our ignorance—or perversity.

Confusion is the term which may properly be applied to the lack of correspondence between the mental processes and the outward conduct of enginemen (and conductors) and the theoretical mental operations (for running trains without the block system) in the rule book. In this case an engineman (passenger, eastbound) displaying green flags, said that he sounded the whistle to call the attention of a freight engineman (westbound) on a side track and that there was a sound from the whistle of the engine on the siding; but whether or not this sound was the prescribed acknowledgement of his own signal he could not say; there was too much noise on his own engine. The freight engineman did not see the flags; he denied hearing the whistle signal (and of course did not answer a signal which he did not hear); the fireman and the head brakeman corroborated his statement that the eastbound train did not whistle; the conductor of the eastbound could not corroborate his own engineman; and the government investigator distrusts the testimony of those who did back up the engineman. In fact, the investigator was so confused by the multitude of discrepancies in the testimony of the ten or eleven men who ought to have been able to give clear, truthful, and consistent testimony concerning the whole situation that he gave up in despair, and he only said that he "believed it possible" that the whistle signal was not sounded.

The rest of this story would take a column or two. It is more, interesting than fiction; but like the popular fiction of the day, its length compels us to send the reader to another page (our account of train accidents in September). The most comprehensive conclusion of the investigator is that embodied in his statement that all of the men on the westbound train, except the pilot, were inattentive to their duties.

Adding to the foregoing the other confusing features shown in the account of the collision and the subsequent investigation, what do we see? A dozen questions of veracity which no ordinary man could settle without the skilful aid of the Supreme Court; and as many more questions about qualifications, discipline, personal habits and daily practices, which the trainmaster could, indeed, settle if he had unlimited time and financial resources, but which, with things as they are, simply baffle him. Any one who gets at the real state of mind of the typical trainmaster finds him burdened with an assortment of unsettled problems concerning the training of his men that is truly amazing to one who comes to the subject fresh from the outside. Simplification of collision puzzles by the use of the block system serves markedly to reduce these problems, (and it is the only way to reduce them. Compare any investigation of a collision under the block system with any report of a case like that here referred to; the difference is obvious at a glance. Questions of veracity are not absent, of course; where two men are involved in any serious error, all sorts of desperate efforts of each to shift the blame to the other are always to be expected; but the investigator's task is greatly simplified, nevertheless. This case was a good deal more complicated than the average but it was not unusual. The records of the Interstate Commerce Commission would show numbers of them every year, if not every quarter. The collision at Kelleyville, Okla., on September 28, 1917, killing 23 passengers, was of the same kind as the present case, though not so many men were at fault.

On the other hand, look at South Byron, Ivanhoe and Mount Union, the three most prominent recent collisions under the block system; the question of responsibility was pretty well settled in each case by or before the time the formal investigation was started. These were great disasters, involving difficult questions; but at least we can say that the technical definition of what ought to be done in such cases is reasonably clear. These three collisions all occurred under automatic signals. With nonautomatic the situation is not usually so free from complication; but with either system the problem is simplicity itself as compared to that of dealing with men who have "fallen down" in their grapple with the intricacies of the Standard Code.

As intimated above, this article is predicated on a collision reported in the record of last September (the second item in the list); but its lesson applies without change to a large class; to most of those on lines not worked wholly by the block system, where the realiability of the conductor and the engineman are supposed to be bolstered by the vigilance of brakemen and firemen.

Increased Investment Required to Reduce Labor Costs

AMONG the most interesting statistics which have been made public by the Railroad Administration are those which it recently furnished to the Senate Committee on Interstate Commerce regarding the number and compensation of railroad employees in the year 1919 as compared with December, 1917, the last month of private operation.

These statistics show that in December, 1917, the number of employees of the railways now under government control was 1,703,748, while in July, 1919, it was 1,894,287, an increase of 190,539, or 11.2 per cent. The total compensation paid to the employees of Class I railways—which are substantially the same as those under government control—in the entire year 1917 was $1,740,000,000. The total compensation paid to the employees of the railways under government control in July, 1919, was $226,141,000. This is at the annual rate of over $2,700,000,000. Some advances have been granted since July to shop employees and train service employees. These statistics confirm estimates previously made by the *Railway Age* that wages on the Class I railways are now running at the rate of approximately $2,800,000,000 a year. If the wages being paid by the Class II and III railways were added this amount would be increased to approximately $3,000,000,000.

Director General Hines calls attention to the fact that the increase in the number of employees has been almost entirely due to reduction in the hours of work per day. He points out that in December, 1917, the total number of hours worked by the persons then on the pay roll was 434,000,000, while in July, 1919, with over 190,000 more persons on the pay roll, the total number of hours worked was less than 417,200,000.

The average number of employees of Class I roads

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throughout the year 1917 was 1,732,876, and it may be pretty safely assumed that this was approximately the number employed in July, 1917. The amount of passenger traffic handled in July, 1919, was substantially larger than the amount handled in July, 1917. On the other hand, the amount of freight business handled in July, 1919, was substantially less than in July, 1917. In other words, the increase in the number of men employed was not due to or accompanied by an increase in the amount of traffic handled, and, in consequence, there was a decline in the total amount of traffic handled per employee. Such statistics as are available indicate that the number of tons moved one mile per employee in July, 1917, was 21,000, and in July, 1919, only 18,500; while the number of passengers moved one mile per employees in July, 1917, was about 2,300, and in July, 1919, it was 2,400. During all the years when the question of an eight-hour working day in the railroad and other businesses has been under discussion it has been contended by some persons that a reduction of hours would result in a reduction of production and by others that it would not result in a reduction of production because the average worker would accomplish as much in a working day of eight hours as in a working day of ten hours, for example. The statistics of the Railroad Administration demonstrate that the effect of reducing the average hours worked per day per employee has been to make it necessary to employ over 11 per cent more men to do a somewhat smaller amount of work.

The reduction made in working hours probably was justifiable. It was justifiable if, in the circumstances existing at the time, the establishment of an eight-hour day in any industry was justifiable. But the fact that the reduction in hours has resulted in a reduction in the amount of work done per employee and therefore in a large increase in the number of employees required to handle the same amount of traffic, must not be overlooked. The eight-hour day in railway service having been adopted, it is practically certain that it will never be abolished. Under private operation the companies may succeed, even with existing facilities, in handling a slightly larger business with the present number of employees. But all the big increases in the amount of traffic handled in proportion to the number of men employed which occurred before government operation was adopted, were due, not to the fact that the average employee did more work, but to the fact that the managers and officers of the railroads worked out better operating methods and designed or adopted larger or better yards, cars, locomotives, and so on, and that the owners of the railroads furnished the capital required to provide the additional and improved facilities. They were due chiefly, not to the work of the employees, but to the investment of more and more brains and capital in the industry.

The establishment of the eight-hour day, with its consequent effect of rendering it necessary to employ about 11 per cent more men to handle actually a smaller traffic, has of itself caused a large increase in railroad expenses. This increase in the number of employees required for a given amount of work has been accompanied by a large increase in wages per employee, which has had the effect of pyramiding the increase of expenses and making it very large. There is only one way in which the effect of these influences on expenses can be even partly nullified, and that is by adopting better operating methods and providing facilities which will again begin to reduce the amount of labor required to move a given amount of traffic, as was being done steadily for years before the eight-hour day was established. But these larger and better facilities cannot be provided without a large investment of capital. It will be true in the future as it has been in the past, that the only way to effect very large economies in operation will be to make large investments of capital in facilities which will increase the amount of traffic which can be handled in proportion to the number of persons employed.

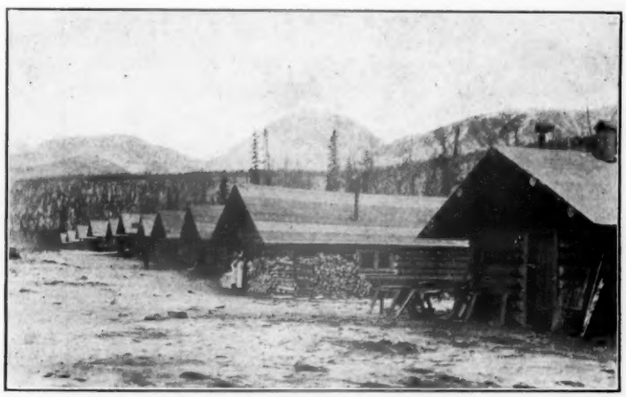
There has been much said in our own columns and elsewhere about the need for a large investment of capital to enable the railroads to expand their facilities. Another most important reason why a large investment of capital is needed is afforded by the enormous increase which has occurred in the railroad pay roll. The fact cannot be too forcibly emphasized that the effect of this on operating expenses cannot be materially offset in any way except by a large investment of capital in equipment and facilities which will reduce, as past investments of capital have reduced, the amount of labor required to move a ton or a passenger one mile.

It is most unfortunate that such fundamental principles of railway economics as this one are understood by very few people outside of the class who finance and operate railways. If it were possible to make economists, members of regulating commissions, shippers and lawmakers understand that whatever tends excessively to restrict the amount of capital invested in railroads not only tends to prevent them from adequately increasing their facilities, but also tends to prevent them from effecting economies in operation which are necessary to enable them to make low rates, we should soon have the railroad problem discussed and acted upon with more intelligence than it has been in the past.

New Books

Proceedings, American Wood Presevrers' Association, 1919, *6 in. by 9 in., 310 pages of text, 30 pages of advertising, illustrated. Published by the American Wood Preservers' Association, F. J. Angier, secretary-treasurer, Baltimore & Ohio Railroad, Baltimore, Md.*

This book contains the running report including committee reports and personal papers presented at the fifteenth annual meeting of the American Wood Preservers' Association held at St. Louis on January 28 and 29, 1919. Studies of substitute preservatives to compensate for the growing scarcity of creosote, specifications of the United States Railroad Administration for ties and for preservative treatments of timber were among matters of special interest presented at this meeting. The last 40 pages of the text consist of statistical data on the consumption of preservatives, the amount of timber, ties, piles, poles, etc., treated, as prepared by the United States Department of Agriculture, Office of Forest Products, in co-operation with the American Wood Preservers' Association.



Scenes on the Government's Alaska Railroad. Camp 24 on King River, Matanuska Branch

Map of Government Owned and Controlled Lines and the Grand Trunk

Map of Privately Owned Canadian Pacific

Canada's Extension of Railway Nationalization*

Development of Government Ownership in the Dominion Produces a Peculiar Transportation Situation

THE DOMINION OF CANADA seems to be drifting steadily and surely toward the nationalization of her railways. Despite a lesson more convincing every day of the failure of government operation of railways in the United States, and in spite of the similarity between the two countries in respect to almost all conditions which affect railroad operation and management, the experience of the United States with government operation during the past two years has, to all appearances, meant little to those in Canada who are formulating national policies. In fact, the long struggle with the railroad problem south of the international boundary has had little or no effect on developments in the Dominion.

This apparent checkmating of national railway policies by the two nations goes even further. When the United States turned to government operation as a war-time measure, the Dominion refrained from such drastic action and allowed the roads which were then leading a corporate existence, to prove that they were able to handle the increased volume of war-time traffic as expeditiously and as successfully as they had handled the smaller peace-time business. While our government shouldered the burden of operating the railways, Canada went to the source and controlled the shipper instead of the railroad—and succeeded. This policy of *laissez faire*, in transportation, which made Canada's war problem much less complex than it otherwise would have been, proved the efficiency and versatility of the privately owned and operated railroad under the abnormal conditions incident to the war.

Again, our recent railway ailments promise to be eradicated at the present session of Congress by a return to private management with governmental regulation as a permanent national policy, whereas Canada, which has long been dabbling in government ownership, seems now to be entering upon a very extensive nationalization policy. Where our troubles are seemingly to diminish in the near future, Canada's real troubles are seemingly just about to begin.

It is the purpose of the present article to outline only the present railway situation in the Dominion of Canada. The events which have led up to this situation, the seeming inevitableness of the steps which the Dominion government has taken so far, and the probable effects upon Canada's contemporary and future railway history of the steps already taken and those which appear about to be taken, will be dealt with in later articles.

Canada's Transportation Plant

At the present time Canada's seven main lines may roughly be segregated into three classes insofar as the nationalization program is concerned first, roads owned by the government and managed by an operating organization; second, roads in which the government is heavily interested financially, but which are operated by private management and, third, roads, or rather a road, wholly privately-owned and operated.

Of roads belonging to the first class there are consolidated under the direction of one operating organization (that of the Canadian National Railways Company) the four government-owned lines, formerly known as the Inter-Colonial, the Prince Edward Island, the National Transcontinental and the Canadian Northern. This operating company was formed after the mileage of government-owned lines had been so increased by the addition of the 9,648 miles of the Canadian Northern System as to make their unified management and operation seem desirable. The executive officers of this company are in the main the old executive officers of the Canadian Northern. Its operating staff is composed substantially of the same men who have been operating the Canadian Northern and the Canadian Government Railways, i. e., the Prince Edward Island, the Inter-Colonial and the National Transcontinental. Until recently the Canadian National Railways Company was a temporary arrangement, but, with the passage by both houses of the Canadian parliament of a bill, House Bill 70, incorporating the company, the temporary organization became a permanent one.

Under the provisions of this bill there has been created a "railroad company" in every sense of the word except in that, instead of shareholders being the power behind the management, the government has assumed this position. The powers conferred upon the new organization are substantially those conferred upon a private railroad corporation by its stockholders; the voice usually retained by the shareholders in a privately owned railroad corporation is retained by the government; and the government, like the shareholders in a private corporation, supplies the money for the operation and development of the plant. In other words, Canada now has in the case of these lines something approximating to government ownership and private operation.

All statistical statements used in the compilation of the cost of construction, indebtedness, etc., of Canada's roads which appear in this series of articles, are taken from the Sessional Papers presented before the Canadian Parliament up to and including the report for the year 1916. Figures for these items after that date are not available, but with higher operating costs, higher costs of material and labor, and no corresponding increases in rates, the financial position of the roads has not improved since then. The Canadian railways have been granted rate increases equal to those granted by the Interstate Commerce Commission in the United States. At the same time the Canadian roads have granted wage increases equal to those granted in the United States. The increase in the cost of materials and labor have more than counterbalanced the advantages arising from the increased earnings.

The Intercolonial and Prince Edward Island

The oldest railroad in point of ownership by the Dominion is the Intercolonial, running from Sidney, N. S., and Halifax north to the Gulf of St. Lawrence, and thence southward along the St. Lawrence river to Montreal, passing through Moncton, N. B., and Quebec, and forming the eastern link in the government-owned transcontinental line. The government's ownership dates back to 1867, approximately 52 years. The mileage of the Intercolonial is approximately 1,500 miles. A large part of this mileage is through unproductive, rocky sections of eastern Canada, with great stretches of non-traffic producing territory lying between the main terminals. Because of this uneconomic location, determined years ago by political and military considerations, plus the inevitable results of political interference under government ownership, the road has been a consistent drain on

* First of a series of three articles outlining the present situation of the Dominion of Canada's railways, the events which led up to this situation and the results that might ensue as a result. The second and third articles of the series will appear in subsequent issues of the Railway Age.

the public treasury. Never since its purchase and development by the Dominion government has it been able to meet both its operating expenses and interest charges on the capital invested, and in a majority of years it has not even earned its operating expenses. Probably, situated as it is with regard to traffic producing territory, it could never have been successful as a separate venture. Now, however, it is linked with other roads which are traffic producers and the decision as to whether it will be successful or not depends not so much on its operation as a single unit as on its operation as one link in the government-owned transcontinental chain of roads.

Of the Prince Edward Island, the second road named in this group of roads which are now under the jurisdiction of the newly formed Canadian National Railways Company, little need be said because of its remoteness from the general railway situation in Canada. It is a narrow gage road of approximately 278 miles, serving Prince Edward Island and was formerly under the same management as the Intercolonial. However, it has one characteristic in common with the other roads in this group, namely, the propensity to consistently incur deficits. Never in any year in its history has the Prince Edward Island been able to earn its operating expenses, much less its interest charges. It has had little effect on the present situation in Canada except as a drain upon the public treasury.

National Transcontinental

In the case of the third of these government-owned railroads, the National Transcontinental, an entirely different situation presents itself. The National Transcontinental was built directly by the Dominion government, beginning in 1904, and has been operated by the government since its completion in 1913. Running from Quebec to Winnipeg with a mileage of approximately 2,067 miles, the National Transcontinental forms the second link in the new government chain across the continent. It was built as a result of an agreement between the Dominion government and the Grand Trunk Railway Company, the details of which will be given in the second of this series of articles. In regard to the present situation, however, the cost of construction of this road up to 1917 amounted to $164,000,000. The government commission which built it was composed of men inexperienced in railroad construction. Another government commission, composed of F. B. Gutelius and J. Lynch-Staunton, which was appointed in 1912 to investigate charges of extravagance, corruption and mismanagement in the road's construction, reported a waste of many millions of dollars.

As an operating success it has been equally deficient. The total operating expenses up to 1916 were $4,744,129 as compared with operating revenues of $3,956,234, leaving an operating deficit of $787,895. The road has many miles of main lines with few miles of branch lines or feeders. The main part of the route between Quebec and Winnipeg passes through undeveloped territory, originating little traffic other than wood pulp and timber. Whether the National Transcontinental will be a success as a part of the new government transportation system depends on the latter rather than upon it.

Canadian Northern

The fourth road now owned by the government and operated as an integral part of the Canadian National Railways is the Canadian Northern, running from Quebec in the East to the Pacific coast at Vancouver, B. C., and with a network of lines in Manitoba, Saskatchewan and Alberta. The total mileage of the road is 9,405 miles. It provides an alternative route from Winnipeg east through Toronto and Montreal to Quebec, and the section from Winnepeg west forms the western link in the new system. The line was constructed by Sir William MacKenzie and Sir Donald Mann with liberal government assistance. Briefly, the financial story of the road developed in such a manner as to make the governments, Provincial and Dominion, in one way or another the guarantors of about 75 per cent of the company's liabilities. The war, higher operating costs, invasion of the territory served by the Canadian Northern by other railways and a faulty policy pursued by the road brought it into financial difficulties and it was unable to finance itself. Ostensibly there was nothing left for the government to do, in the light of the necessity for maintaining uninterrupted service throughout this part of the Canadian west and protecting its already large investment in the property, but to take over the road. After arbitration proceedings Messrs. MacKenzie and Mann, who held 60 per cent of the common stock, were paid approximately $10,000,000 for their holdings and the road was placed under the jurisdiction of the Canadian National Railways. The extent of the interest of the government in the Canadian Northern at the time of the report made by Sir H. L. Drayton and W. M. Acworth, members of a Commission of Inquiry appointed in 1917 to investigate the railway problem, was $298,253,263, which sum includes subsidies, proceeds of land sold, loans outstanding on investments and guarantees outstanding. In view of the prospect of the necessity of constantly aiding the road from funds in the public treasury, it was taken over by the government on July 1, 1918, thereby bringing the total mileage of the government-owned lines up to 13,200 miles.

This system as now constituted gives to the Dominion government a nationally owned transcontinental line. However, this line has a serious lack of traffic originating branch lines in those districts in which much of Canada's products originate. The one exception to this lack of feeders is in the Western grain-producing provinces where the Canadian Northern had built a large network of branch lines to handle the wheat crops. A transcontinental line, so much of which passes through unproductive territory as does the Canadian National Railways, could never be successful without a complete system of branch line feeders to originate traffic, which in turn supports the expense of the long haul.

Fortunately, perhaps, for the nationalization plan the financial trouble which precipitated the acquisition and amalgamation of the Canadian Northern has also affected two other lines, one of which, the Grand Trunk Pacific, traverses rich traffic-producing territory in the western provinces and extends to the Pacific coast, and the other, the Grand Trunk, forms a network of traffic-producing lines in Canada's industrial districts. These two roads comprise the second division, i. e., roads in which the government is heavily interested financially, but which are not yet government-operated in the ordinary sense.

The Grand Trunk Pacific

The Grand Trunk Pacific, with a mileage of 2,809 miles, the eastern terminal of which is at Winnipeg, and which traverses the richer portions of the provinces of Manitoba, Saskatchewan, Alberta and British Columbia to Prince Rupert on the Pacific coast, is now nominally a government railroad, although it is not operated as a part of the Canadian National Railways. The Honorable J. D. Reid, minister of railways, was appointed by the government as receiver for the road, on March 7, 1919, under the War Measures Act. This action was taken immediately after its parent and sponsor, the Grand Trunk, had notified the Dominion government that it could not operate the road after March 10, because of the heavy deficit incurred in its operation and the refusal of Parliament to grant further aid for the maintenance of service on the Grand Trunk Pacific. This rather complicated situation is due to the conditions under which the Grand Trunk Pacific was constructed and the relations of the Grand Trunk and the Dominion government to it.

It may be recalled here that the Grand Trunk Pacific was constructed by the Grand Trunk, liberally assisted by the Dominion government as part of an agreement entered into between the government and the latter company for the construction of a transcontinental line, the Grand Trunk Pacific, part of which was to be constructed by the Grand Trunk and the eastern half, the National Transcontinental, by the Dominion government. This latter portion of the line, east of Winnipeg, was to be leased, after its completion, to the Grand Trunk Pacific Company, the rental to be based on the cost of construction. Upon the completion of the National Trancontinental the Grand Trunk refused to take over its operation because of its excessive cost of construction, which, of course, greatly raised the rental to be paid. Insofar as the Grand Trunk Pacific is concerned, the financial development of the road arrived at a point where the Dominion government was interested to the extent of about half of the approximate expenditure of $200,000,000 through the payments of deficits and the guarantee of bonds, and the Grand Trunk was responsible for approximately an equal amount.

The upward trend of operating costs and, as stated before, the refusal of the acting premier, Sir Thomas White, to ask Parliament to appropriate further funds for the maintenance of service on the Grand Trunk Pacific led the officers of the Grand Trunk, who are likewise the officers of the Grand Trunk Pacific, to notify the Dominion government that it would be impossible to continue operating the Grand Trunk Pacific after March 10. As a result, at the present time the Honorable J. D. Reid, minister of railways, is head of the Grand Trunk Pacific company as receiver, and its former officers are continuing operation. But this arrangement is at best only a temporary device to maintain uninterrupted service until it is possible to absorb the Grand Trunk Pacific into the Canadian National system. It is generally conceded that this action will be taken in the near future and that the Grand Trunk Pacific will become an integral part of the Canadian National Railways. This development, however, depends largely upon the future relations between the Dominion government and the Grand Trunk.

The Grand Trunk

As to the other line or system falling into this classification, the Grand Trunk, little can be said with certainty as to its present situation. The government had been extending liberal financial aid to the company, and in January, 1918, opened negotiations for the perpetual lease of the property. These negotiations, after passing through a series of proposals and counter proposals, in which the Grand Trunk's liability for the Grand Trunk Pacific played a major role, seem to be nearing completion. The outcome of these negotiations has not been announced, but when the strategic position of the Grand Trunk lines is considered, the assumption that the negotiations will end in government acquisition seems safe.

The main part of the Grand Trunk's mileage lies in Ontario, east of Lake Huron and north of Lakes Erie and Ontario. In this district is produced the major part of Canada's manufactured products. The Grand Trunk's lines have been constructed to handle the traffic produced here as well as possible, and the result is a network of lines, all serving a definite purpose. In this district, too, the cities and towns are old and well developed, making the establishment of new terminals in this territory doubly hard and expensive. On the other hand, the Grand Trunk has built fairly adequate terminal and switching facilities throughout this district. The needs of government lines can be largely met by the Grand Trunk, and it is therefore safe to assume that some co-ordinating arrangement will be made. Without some arrangement with the Grand Trunk the Canadian National Railways would be obliged, in order to operate efficiently and successfully, to duplicate lines and terminals of the Grand Trunk, at a cost of approximately $150,000,000.

The Canadian Pacific

Against these two closely interwoven groups of railroads, which may be viewed even now as one, is arrayed the successful privately owned and operated transcontinental line, the Canadian Pacific. Operating approximately 13,000 miles of splendidly equipped and maintained road from St. John, N. B., on the Atlantic coast to Vancouver on the Pacific coast, it stands out as one of the best examples in the world of a successful privately owned and operated railroad.

Financially it is a powerful corporation; this too in spite of rapidly rising operating costs and stationary revenues. Since July 1, 1913, the road has had relatively a very small funded debt and the government now has practically no definite financial interest in the Canadian Pacific other than an indirect interest figured in the value of land granted the road. Physically the road is in its normal state, which, however, is a standard to which it would take millions to elevate most of the roads now or to be under the Canadian National Railways Company. The position of the Canadian Pacific is too well known to require detailed exposition; the interest lies not in the Canadian Pacific's present status, but in the status of the Canadian National Railways and especially in what this peculiar Canadian railroad situation may develop into in the future.

The Present Situation Summed Up

Briefly, then, the present railway situation may be summarized as follows: The Dominion government owns and is operating as one system approximately 13,200 miles of line, namely, the Intercolonial, the National Transcontinental and the Canadian Northern, which represented up to and including 1916 a total public interest officially reported at $600,000,000. The Dominion government further controls the Grand Trunk Pacific with 2,809 miles of line and is negotiating for the control of the Grand Trunk with 3,567 miles more. Thus it may be assumed that there will be under the banner of the Canadian National Railways and operated as one system in the near future almost 20,000 miles of railways, in which will be included not only a transcontinental line but a system with a network of traffic-producing lines to feed the main lines.

In competition with this will be operated the Canadian Pacific with its records for service, its established traffic and its admitted financial strength. This situation of a government owned transcontinental railway, operating in competition with a privately owned transcontinental railway, each with its network of branches for the gathering of traffic and practically paralleling each other across the American continent will be without precedent in the history of steam transportation.

There is an interesting international complication in connection with this situation, which has not been without its influence upon the developments so far and will not be without influence upon developments in the future. The Canadian Northern, now owned by the government, has a mileage in the United States of 225 miles, of which 44 miles are proprietary and 181 are leased. Most of this mileage is in the Duluth, Winnipeg & Pacific, but this line is practically a separate corporation. The fact that this mileage is comparatively small has not and probably will not make a great difference in international relations, as the present arrangement of a separate corporation controlling this mileage in the United States will probably be continued by the Dominion government.

The Grand Trunk, however, controls approximately 1,868

miles of road in the United States. The controlling of this mileage by the Grand Trunk would, if the Grand Trunk were purchased by the Dominion government, create a rather complicated international situation, with the Dominion government practically taking orders from the Interstate Commerce Commission and being forced to abide by laws made by the United States government. To obviate this situation the Dominion government is negotiating for the perpetual lease of the Grand Trunk rather than its purchase.

The Canadian Pacific also has a mileage of 4,948 miles in the United States, of which 145 are proprietary, 32 leased, and 4,771 miles controlled. This mileage of the Canadian Pacific has no influence on the present situation, but it would have an influence if there should be a move toward nationalization of the Canadian Pacific itself.

Whatever may be said of the railway nationalization program in Canada the fact remains that some of these roads had fallen into financial difficulties, and that because of the Canadian policy of government assistance to railway construction, the government was faced with the necessity of paying ever-increasing deficits out of the public treasury. The government decided that, since it had to pay these deficits, it might as well be sure of its reward in the event that the roads whose deficits were paid should become successful in the future.

The developments which have led Canada to the present situation will be discussed in the next article in this series, after which the bearing the present situation may have on the future of Canada's railroads will be treated in a third article.

Wood Preservation Statistics for 1918

THE PROCEEDINGS of the American Wood Preservers' Associates for 1919 contains a statistical report on the wood preserving industry for 1918 and previous years which contains many data of interest to railroad men concerned with the treatment of timber used in railroad work. The statement below was prepared from material contained in this report.

There was a reduction of over 10 per cent in the cubic feet of wood subjected to treatment during 1918 as compared with the year previous. The cubic feet of wood treated in 1918 was 122,612,890 cu. ft. as compared with 137,338,586 cu. ft. in 1917. The number of railroad cross ties treated in 1918 was 30,609,209 or 2,850,261 less than the 33,459,470 reported for 1917. The number of piles treated in 1918 was 12,286,517 lin. ft. as compared with 12,695,567 lin. ft. in 1917. The quantity of wood blocks treated was 2,398,869 sq. yd. or 1,062,071 sq. yds. less than the quantity treated in 1917. In the case of construction timber which includes bridge timber, switch ties, etc., the quantity treated in 1918 was 122,587,120 ft. b. m. or a decrease of 15,000,000 ft. b. m. from the quantity reported in 1917.

This decrease in the amount of timber treated during the year has, of course, a direct relation to the amount of preservative used. In the case of coal tar and creosote, of which there was a distinct scarcity during the latter part of the war period, 47,787,998 gal. were used or a reduction of 22,610,611 gal. or 30 per cent as compared with the quantity reported for 1917. The consumption of water-gas tar, 2,822,652 gal., paving oil, 4,057,862 gal. and miscellaneous preservatives 28,013 gal., also represent decreases as compared to 1917. However, in the case of zinc chloride of which 31,101,111 lb. were used during 1918, there was an increase to the amount of 4,656,422 lb. as compared to 1917.

These statistics were gathered by the Forest Products Service from signed statements received from 101 treating plants out of a total of 107 plants of all kinds in active operation during 1918. There are 123 treating plants in the country at the present time but 16 of these were idle for one reason or another during the year.

The prices paid for preservative materials did not increase as much between 1917 and 1918 as in the period previous to 1917. The following table gives the range of prices for the years 1917 and 1918 compared:

Preservative	1917	1918
Coal-tar creosote, per gal.	$0.065 to $0.230	$0.075 to $0.360
Water-gas tar, per gal.	0.043 to 0.060	0.054 to 0.075
Zinc chloride, 50 per cent solution, per lb.	0.029 to 0.075	0.030 to 0.045
Zinc chloride, fused, per lb.	0.063 to 0.085	0.065 to 0.085

Of the total quantity of timber subjected to treatment during the year, measured in cubic feet, 75 per cent consisted of cross ties. Of the total number of ties treated, 30,609,209, the number that were hewed ties was 19,502,999 as compared to 11,106,210 sawed. Of the total number 38 per cent or 11,714,728 were oak ties, 33 per cent or 10,216,064 were yellow pine ties and 12 per cent or 3,855,318 were Douglas fir. Four million more ties were treated with creosote than with zinc chloride, but with the scarcity of creosote in 1918 larger use was made of zinc chloride, with the result that during the year covered by the report, 17,055,382 ties were treated with that material as compared with 11,546,049 treated with creosote. A total of 2,007,778 were treated with zinc creosote emulsion, while no ties were subjected to treatment with miscellaneous preservatives. During 1918 lighter injections of preservatives were given. In the case of creosote, water-gas tar and paving oil, the amount of preservative forced into the wood was 7.77 lb. per cu. ft. For zinc chloride it was 0.47 lb. per cu. ft., while with the zinc creosote emulsion the injection averaged 2.61 lb. of creosote and 0.49 lb. of zinc per cu. ft.

The piles subjected to preservative treatment during the year were principally Douglas fir and Southern yellow pine with a small amount of oak. In treating piles with creosote, water-gas tar and paving oil an average injection of 13.79 lb. per cu. ft. was obtained, while in the case of zinc chloride the average absorption was 0.46 lb. per cu. ft., and in the case of the emulsion it amounted to 2.5 lb. of creosote and 0.51 lb. of zinc per cu. ft.

CONSUMPTION OF WOOD PRESERVATIVES BY THE TREATING PLANTS OF THE UNITED STATES 1909 TO 1918

Year	Plants number	Creosote (a) gallons	Zinc chloride pounds	Other preservatives (b) gallons
1909	64	51,431,212	16,215,107	(c)
1910	71	63,266,271	16,802,532	2,333,707
1911	80	73,027,335	16,359,797	1,000,000
1912	84	83,666,490	20,751,711	3,072,462
1913	93	108,373,359	26,466,803	3,885,738
1914	94	79,334,606	27,212,259	9,429,444d 2,486,637
1915	102	80,859,442	33,269,604	3,205,563d 1,693,544
1916	117	90,404,749	26,746,577	5,675,095d 582,754
1917	115	75,541,737	26,444,689	7,579,819d 137,361
1918	107	52,776,386	31,101,111	4,057,862d 28,013

(a) Includes coal-tar creosote and water-gas tar.
(b) Includes refined coal-tar, corrosive sublimate, and carbolineum oils.
(c) Statistics not available.
(d) Paving oil.

A SCHEME has been prepared for converting the section of the New York subway between Forty-second street and Times Square into a moving platform. It is proposed to provide four moving platforms. The nearest will run at walking speed, the second at 6 miles per hour, the third at 9 miles per hour, and the furthest at 12 miles per hour. The last will be 5 ft. 10 in. wide and have seats, each to hold three persons. The other platforms will be 2 ft. wide.

Director General Reports on Railroad Wages

11.2 Per Cent More Employees Worked 3.9 Per Cent Less Hours—Unit Wage and Monthly Earning Compared

DIRECTOR GENERAL HINES on November 14 submitted to the president of the Senate the following letter and accompanying statements in response to the resolution of the Senate of August 20, calling for information as to the amount of railroad labor, its rates of pay and its average compensation in December, 1917, and in each month from January to July, 1919:

The amount of labor, measured by the time worked and paid for, for which the United States Railroad Administration has paid in months from January to July, 1919, as compared with the month of December, 1917, is listed in the table at the right.

	Total number of hours worked	Increase in percentage as compared with December, 1917
1917—December	434,252,656	.....
1919—January	440,699,731	1.5% increase
February	375,204,721	13.6% decrease
March	398,689,315	8.2% decrease
April	393,578,428	9.4% decrease
May	409,674,681	5.7% decrease
June	396,385,011	8.7% decrease
July	417,182,290	3.9% decrease

In considering this comparison, it is important to bear in mind that the amount of labor paid for in December, 1917, was reduced because of the extreme cold weather, which resulted in the suspension of much outside work and because the competition of war industries, generally

AVERAGE MONTHLY COMPENSATION AND AGERAGE DAYS OR HOURS WORKED PER EMPLOYEE
Class 1 Roads Under Federal Control
July, 1919, Compared with December, 1917, and Monthly Average for Calendar Year, 1917

Item No.	Class of Employee	Average Monthly Compensation Per Employee			Per cent increase July, 1919, over		Average hours worked per employee	
		July, 1919	December, 1917	Calendar year 1917	December, 1917	Monthly average for calendar year, 1917	July, 1919	December, 1917
1 and 2	General officers	$359.60	$390.26	$379.84	*d* 7.9	*d* 5.3	*d* 27.7	*d* 27.9
3 and 4	Division officers	245.47	178.23	174.92	37.7	40.3	*d* 29.4	*d* 30.6
5 and 6	Clerks (except No. 37)	111.83	79.58	77.63	40.5	44.1	213	230
7	Messengers and attendants	70.44	44.26	42.86	59.2	64.3	*d* 28.1	*d* 27.5
8	Assistant engineers and draftsmen	138.96	104.74	95.40	32.7	45.7	*d* 26.6	*d* 26.7
9	M. W. & S. foremen (excluding Nos. 10 and 28)	142.68	106.90	99.74	33.5	43.1	*d* 27.2	*d* 29.1
10	Section foremen	108.18	78.21	73.84	38.3	46.5	*d* 28.2	*d* 28.9
11	General foremen—M. E. department	259.51	135.69	138.37	91.3	87.5	*d* 29.9	*d* 27.1
12	Gang and other foremen—M. E. department	195.41	122.26	112.64	59.8	73.5	*d* 28.4	*d* 28.9
13	Machinists	142.18	126.11	116.20	12.7	22.4	206	248
14	Boiler makers	147.74	127.67	118.76	15.7	24.4	213	253
15	Blacksmiths	136.35	110.92	104.84	22.9	30.1	200	224
16	Masons and bricklayers	115.37	80.88	77.64	42.6	48.6	202	223
17	Structural iron workers	131.58	86.17	84.53	52.7	55.7	201	226
18	Carpenters	117.30	81.70	78.35	43.6	49.7	201	234
19	Painters and upholsterers	118.64	85.89	79.22	38.1	49.8	194	225
20	Electricians	143.97	93.59	85.84	53.8	67.7	*d* 26.8	*d* 29.0
21	Air-brake men	132.37	100.59	90.53	31.6	46.2	217	280
22	Car inspectors	145.71	106.03	95.02	37.4	53.3	239	328
23	Car repairers	123.33	87.77	82.81	40.5	48.9	209	240
24	Other skilled laborers	132.15	95.00	88.77	39.1	48.9	213	254
25	Mechanics' helpers and apprentices	95.13	74.17	68.52	28.3	38.8	208	251
26	Section men	77.80	53.48	50.09	45.5	55.3	207	251
27	Other unskilled laborers	87.60	63.77	57.94	37.4	51.2	215	260
28	Foremen of construction gangs and work trains	128.04	101.71	85.91	25.9	49.0	226	316
29	Other men in construction gangs and work trains	81.84	59.24	51.95	38.1	57.5	206	248
30	Traveling agents and solicitors	177.60	154.29	136.82	15.1	29.8	*d* 25.8	*d* 28.5
31	Employees in outside agencies	140.85	119.72	88.85	17.6	58.5	*d* 27.8	*d* 32.5
32	Other traffic employees	165.40	125.16	110.83	32.2	49.2	*d* 27.0	*d* 24.8
33	Train dispatchers and directors	288.13	155.66	150.13	46 6	52.0	242	258
34	Telegraphers, telephoners and block operators	129.46	80.59	76.39	60.6	69.5	234	245
35	Telegraphers and telephoners operating interlockers	131.43	85.48	79.71	53.8	64.9	232	232
36	Levermen (non-telegraphers)	125.28	74.24	70.99	68.8	76.5	240	283
37	Telegrapher-clerks	129.23	80.23	74.35	61.1	73.8	237	273
38	Agent-telegraphers	139.64	87.51	79.06	59.6	76.6	244	305
39	Station agents (non-telegraphers)	139.50	92.36	86.52	51.0	61.2	*d* 29.5	*d* 31.4
40	Station masters and assistants	161.01	109.07	107.66	47.6	49.6	*d* 30.3	*d* 31.8
41	Station service employees (except Nos. 5, 6, 37, 38, 39, 40 and 66)	93.52	64.75	59.14	44.4	58.1	223	273
42	Yardmasters	247.39	157.98	150.19	56.6	64.7	*d* 30.3	*d* 32.4
43	Yardmasters' assistants (not yard clerks)	216.17	136.02	142.12	58.9	52.1	*d* 29.7	*d* 30.4
44	Yard engineers and motormen	175.14	148.62	149.16	17.8	17.4	237	275
45	Yard firemen and helpers	126.03	92.15	91.10	36.8	38.3	231	271
46	Yard conductors (or foremen)	159.09	129.68	132.03	22.7	20.5	235	269
47	Yard brakemen (switchmen or helpers)	141.51	111.85	110.55	26.5	28.0	224	258
48	Yard switch tenders	120.76	75.44	70.52	60.1	71.2	239	317
49	Other yard employees	92.12	60.70	55.54	51.8	65.9	243	322
50	Hostlers	132.73	110.80	103.73	19.8	28.0	240	337
51	Enginehouse-men	104.55	76.83	69.56	36.1	50.3	250	318
52	Road freight engineers and motormen	223.86	190.09	175.55	17.8	27.5	242	269
53	Road freight firemen and helpers	156.72	114.20	106.11	37.2	47.7	233	250
54	Road freight conductors	194.73	163.90	154.50	18.8	26.0	256	287
55	Road freight brakemen and flagmen	145.70	106.52	100.13	36.8	45.5	250	276
56	Road passenger engineers and motormen	256.41	201.50	186.02	27.3	37.8	220	225
57	Road passenger firemen and helpers	184.19	124.85	112.79	47.5	63.3	216	223
58	Road passenger conductors	226.20	171.47	163.82	31.9	38.1	235	232
59	Road passenger baggagemen	162.33	102.96	97.92	57.7	65.8	240	245
60	Road passenger brakemen and flagmen	151.43	98.97	91.09	53.0	66.2	227	234
61	Other road train employees	120.09	74.72	68.05	60.7	76.5	239	241
62	Crossing flagmen and gatemen	78.68	48.29	44.59	62.9	76.5	*d* 30.3	*d* 30.5
63	Drawbridge operators	98.75	69.94	63.43	41.2	55.7	*d* 31.0	*d* 33.0
64	Floating equipment employees	135.66	92.57	77.36	46.5	75.4	265	305
65	Express service employees	.....	.....	.....	.....	.....	.....	.....
66	Policemen and watchmen	117.79	78.44	74.66	50.2	57.8	*d* 30.2	*d* 31.7
67	Other transportation employees	97.52	77.82	70.41	25.3	38.5	*d* 25.5	*d* 32.0
68	All other employees	82.91	58.29	55.23	42.2	50.1	*d* 28.2	*d* 29.3
69	Totals	$119.38	$89.83	$83.64	32.9	42.7	...	...

"*d*" and italics—decrease.

NOTE.—*d* indicates days worked.

paying higher wages, and the demands of military and naval service created a scarcity of labor which prevented the obtaining of all the labor which could be worked even in such cold weather. On the contrary, in January, 1919, the winter was exceptionally mild and made practically the prosecution of an unusual amount of outside work and the labor supply was relatively greater because of the cessation of war activities and because of higher wages.

The total number of employees in December, 1917, and in the months of 1919 from January to July is as follows:

		Increase in percentages as compared with December, 1917
1917—December	1,703,748	.....
1919—January	1,848,774	8.5%
February	1,840,197	8.0%
March	1,823,220	7.0%
April	1,830,093	7.4%
May	1,864,561	9.4%
June	1,863,741	9.4%
July	1,894,287	11.2%

It will be observed that while the amount of labor which the government has paid for, as measured by the hours paid for, has decreased, there has been an increase in the number of employees. This is due to the fact that the general establishment of the eight-hour basis has necessitated a larger number of employees to perform the same number of hours service. In December, 1917, prior to the adoption of this basis, many employees worked unduly long hours. This is brought out by the attached comparison between hours worked per employee, by classes, in December, 1917, and July, 1919.

A comparison as to the increase in the average compensation of employees in December, 1917, as compared with conditions established up to July, 1919, is given below:

	July, 1919	December, 1917
Number of employees	1,894,287	1,703,748
Days worked	6,122,435	5,819,486
Hours worked	368,202,810	387,696,788
Total compensation	$226,140,935	$153,039,988
Average compensation per day for employees reported on a daily basis	4.93	3.52
Average compensation per hour for employees reported on an hourly basis	.532	.342

Per cent of increase for July, 1919, over December and calender year 1917, 35.3 per cent.

NUMBER OF DAYS OR HOURS WORKED BY EMPLOYEES

Class I, Roads Under Federal Control, December, 1917, and January to July, 1919, inclusive

Item No.	Class of Employee	December, 1917 Number of days	December, 1917 Number of hours	January, 1919 Number of days	January, 1919 Number of hours	Februbary, 1919 Number of days	Februbary, 1919 Number of hours	March, 1919 Number of days	March, 1919 Number of hours
1 and 2	General officers	208,056	.....	193,416	.....	182,704	.....	203,564	.....
3 and 4	Division officers	340,346	.....	362,983	.....	334,238	.....	362,858	.....
5 and 6	Clerks (except No. 37)	.....	44,805,376	.....	48,624,775	.....	42,918,612	.....	45,765,746
7	Messengers and attendants	242,015	.....	281,871	.....	261,445	.....	274,191	.....
8	Assistant engineers and draftsmen	288,585	.....	289,067	.....	259,552	.....	275,755	.....
9	M. W. & S. foremen (excluding Nos. 10 and 28)	226,174	.....	237,528	.....	206,634	.....	220,437	.....
10	Section foremen	1,138,383	.....	1,178,324	.....	1,043,068	.....	1,130,404	.....
11	General foremen, M. E department	45,168	.....	53,019	.....	43,808	.....	50,793	.....
12	Gang and other foremen, M. E. Department	532,500	.....	648,421	.....	593,674	.....	656,298	.....
13	Machinists	.....	10,651,011	.....	12,592,995	.....	10,984,995	.....	11,679,304
14	Boiler makers	.....	3,411,669	.....	4,078,782	.....	3,577,035	.....	3,778,833
15	Blacksmiths	.....	1,878,208	.....	2,074,276	.....	1,798,094	.....	1,883,839
16	Masons and bricklayers	.....	297,177	.....	269,289	.....	199,306	.....	220,421
17	Structural ironworkers	.....	192,511	.....	153,649	.....	109,736	.....	131,144
18	Carpenters	.....	11,883,446	.....	12,131,975	.....	10,421,794	.....	10,749,709
19	Painters and upholsterers	.....	2,223,531	.....	2,474,912	.....	1,980,469	.....	2,103,229
20	Electricians	287,368	.....	352,501	.....	313,360	.....	346,206	.....
21	Air-brake men	.....	1,636,340	.....	1,587,555	.....	1,406,559	.....	1,494,573
22	Car inspectors	.....	6,811,054	.....	6,336,603	.....	5,537,436	.....	5,675,237
23	Car repairers	.....	15,948,946	.....	18,236,118	.....	14,964,963	.....	15,610,970
24	Other skilled laborers	.....	14,030,197	.....	13,205,187	.....	11,332,593	.....	11,834,188
25	Mechanics' helpers and apprentices	.....	23,097,913	.....	24,801,164	.....	21,637,057	.....	22,578,405
26	Section men	.....	53,320,778	.....	59,495,365	.....	48,423,402	.....	53,036,684
27	Other unskilled laborers	.....	27,026,316	.....	29,444,243	.....	25,154,498	.....	26,210,592
28	Foremen of construction gangs and work trains	.....	707,328	.....	518,930	.....	444,767	.....	400,328
29	Other men in construction gangs and work trains	.....	7,119,116	.....	6,697,610	.....	5,603,575	.....	5,524,554
30	Traveling agents and solicitors	149,383	.....	33,262	.....	31,352	.....	34,092	.....
31	Employees in outside agencies	43,579	.....	34,133	.....	26,873	.....	27,966	.....
32	Other traffic employees	12,623	.....	10,200	.....	9,644	.....	10,780	.....
33	Train dispatchers and directors	.....	1,328,309	.....	1,327,900	.....	1,194,465	.....	1,310,541
34	Telegraphers, telephoners and block operators	.....	5,136,759	.....	5,222,225	.....	4,460,012	.....	4,903,408
35	Telegraphers and telephoners operating interlockers	.....	1,910,410	.....	1,893,374	.....	1,717,734	.....	1,834,239
36	Levermen (non-telegraphers)	.....	993,865	.....	969,160	.....	880,996	.....	968,258
37	Telegrapher-clerks	.....	3,052,479	.....	2,820,176	.....	2,514,293	.....	2,689,739
38	Agent telegraphers	.....	5,848,196	.....	5,158,275	.....	4,318,879	.....	4,654,494
39	Station agents (non-telegraphers)	452,606	.....	441,531	.....	381,266	.....	408,846	.....
40	Station masters and assistants	19,520	.....	19,518	.....	19,285	.....	19,558	.....
41	Station service employees (except Nos. 5, 6, 37, 38, 39, 40 and 66)	.....	30,206,592	.....	24,834,419	.....	21,022,046	.....	23,078,699
42	Yardmasters	124,312	.....	126,571	.....	110,951	.....	118 042	.....
43	Yardmasters' assistants (not yard clerks)	93,484	.....	109,475	.....	89,524	.....	94,892	.....
44	Yard engineers and motormen	.....	5,593,160	.....	4,867,441	.....	4,017,528	.....	4,260,727
45	Yard firemen and helpers	.....	5,639,441	.....	4,889,536	.....	3,996,772	.....	4,236,463
46	Yard conductors (or foremen)	.....	5,472,878	.....	4,800,808	.....	3,961,781	.....	4 100,946
47	Yard brakemen (switchmen or helpers)	.....	13,139,861	.....	11,749,143	.....	9,466,338	.....	9,790,417
48	Yard switch tenders	.....	1,534,079	.....	1,535,967	.....	1,364,800	.....	1,447,634
49	Other yard employees	.....	1,180,765	.....	1,252,221	.....	1,127,846	.....	1,155,690
50	Hostlers	.....	2,859,587	.....	2,972,926	.....	2,482,098	.....	2,748,388
51	Enginehouse men	.....	19,191,693	.....	21,425,629	.....	17,756,949	.....	18,431,070
52	Road freight engineers and motormen	.....	8,849,605	.....	7,749.304	.....	6,263.527	.....	6,556,893
53	Road freight firemen and helpers	.....	8,896,511	.....	7,823,401	.....	6,257,073	.....	6,580,927
54	Road freight conductors	.....	7,556,378	.....	6,580,869	.....	5,359,094	.....	5,620,466
55	Road freight brakemen and flagmen	.....	18,029,699	.....	15,738,811	.....	12,915,403	.....	13,481,742
56	Road passenger engineers and motormen	.....	2,877,377	.....	2,724,306	.....	2,347,697	.....	2,565,925
57	Road passenger firemen and helpers	.....	2,778,482	.....	2,636,626	.....	2,255,029	.....	2,463,100
58	Road passenger conductors	.....	2,460,948	.....	2,337,848	.....	2,082,034	.....	2,268,753
59	Road passenger baggagemen	.....	1,352,449	.....	1,254,982	.....	1,140,051	.....	1,256,022
60	Road passenger brakemen and flagmen	.....	3,356,350	.....	3,200,223	.....	2,845,733	.....	3,114,553
61	Other road train employees	.....	892,522	.....	881,618	.....	726,998	.....	804.316
62	Crossing flagmen and gatemen	474,942	.....	663,069	.....	623,223	.....	671,742	.....
63	Drawbridge operators	41,803	.....	52,121	.....	42,258	.....	46,726	.....
64	Floating equipment, employees	.....	2,517,476	.....	2,273,867	.....	2,089,886	.....	1,946,109
65	Express service, employees	.....	.....	.....	.....	.....	.....	.....	.....
66	Policemen and watchmen	389,373	.....	331,808	.....	302,594	.....	331,998	.....
67	Other transportation employees	175,669	.....	209,510	.....	174,057	.....	162,932	.....
68	All other employees	533,597	.....	528,578	.....	468,586	.....	519,675	.....
69	Totals	5,819,486	387,696,788	6,156,906	391,444,483	5,518,096	331,059,953	5,967,755	350,947,275

It is only fair to point out that this showing does not completely reflect the condition as it exists at this date, because in order to equalize the shop crafts with what has been done for other classes of railroad employees, it was found necessary in August, 1919, to make increases in their wages effective May 1, 1919. These, however, could not be included in August or the preceding months affected, but it is believed that if they could have been included in the accounts for July, 1919, the average percentage of increase in the unit of compensation for all railroad employees for the month of July, 1919, as compared with the month of December, 1917, would have been 56 per cent instead of 53 per cent.

It is important to point out, however, that the individual railroad employee did not get in the month of July, 1919, an actual increase in his earnings equal to the increase above indicated in his rate of pay. This is due chiefly to the introduction of the eight-hour day, as a result of which the employee did not on an average work as many hours in July, 1919, as he did in December, 1917. This is emphasized by the attached statement, above referred to, showing by classes of employees the average hours per employee worked in December, 1917, and in July, 1919.

On the other hand, a comparison with December, 1917, is not conclusive, because in that month employees were working a great deal more overtime than they were working on an average during the year 1917, and also many employees had received increases in the latter part of the year 1917, which were not enjoyed throughout the year.

In order to bring out these comparisons (and taking into consideration, as far as it can be done at present upon an estimate, the readjustments recently made to the shop crafts —which were retroactive to May 1, 1919), a comparison of average monthly compensation is as follows:

	July, 1919	December, 1917	Calendar year 1917
Average monthly compensation per employee for all employees, including an estimate of the effect of the increases recently granted to the shopmen	$121.50	$89.83	$83.64
Per cent of increase for July, 1919, over December and calendar year 1917	.....	35.3%	45.3%

The figures as they actually appear in the accounts, with-

Item No.	Class of Employee	April, 1919		May, 1919		June, 1919		July, 1919	
		Number of days	Number of hours	Number of days	Number of hours	Number of days	Number of hours	Number of days	Number of hours
1 and 2	General officers	199,727	.....	204,727	.....	200,497	.....	205,808	.....
3 and 4	Division officers	355,484	.....	365,650	.....	354,770	.....	367,898	.....
5 and 6	Clerks (except No. 37)	.....	45,239,362	.....	45,888,968	.....	44,636,991	.....	46,184,264
7	Messengers and attendants	269,707	.....	275,131	.....	266,247	.....	284,324	.....
8	Assistant engineers and draftsmen	277,704	.....	278,035	.....	264,443	.....	275,949	.....
9	M. W. & S. foremen (excluding Nos. 10 and 28)	213,821	.....	223,285	.....	215,079	.....	220,931	.....
10	Section foremen	1,118,197	.....	1,149,053	.....	1,069,281	.....	1,154,790	.....
11	General foremen, M. E. department	49,432	.....	49,497	.....	49,476	.....	51,039	.....
12	Gang and other foremen, M. E. department	648,615	.....	659,346	.....	647,830	.....	670,200	.....
13	Machinists	.....	11,504,967	.....	11,810,943	.....	11,467,285	.....	12,178,870
14	Boiler makers	.....	3,695,161	.....	3,815,911	.....	3,694,663	.....	3,916,276
15	Blacksmiths	.....	1,907,792	.....	1,901,339	.....	1,844,712	.....	1,981,134
16	Masons and bricklayers	.....	196,309	.....	212,304	.....	213,236	.....	239,603
17	Structural ironworkers	.....	137,573	.....	113,267	.....	126,836	.....	135,541
18	Carpenters	.....	10,327,132	.....	10,348,258	.....	9,904,552	.....	10,209,395
19	Painters and upholsterers	.....	2,169,426	.....	2,343,755	.....	2,310,807	.....	2,450,992
20	Electricians	342,039	.....	344,555	.....	341,953	.....	353,157	.....
21	Air-brake men	.....	1,562,933	.....	1,608,966	.....	1,575,594	.....	1,685,990
22	Car inspectors	.....	5,513,019	.....	5,709,398	.....	5,434,258	.....	5,794,623
23	Car repairers	.....	14,626,722	.....	15,114,145	.....	15,139,816	.....	16,793,844
24	Other skilled laborers	.....	11,469,089	.....	11,784,411	.....	11,225,333	.....	11,990,522
25	Mechanics' helpers and apprentices	.....	21,692,103	.....	21,945,320	.....	20,939,083	.....	22,341,446
26	Section men	.....	57,564,662	.....	62,072,471	.....	58,225,314	.....	59,165,115
27	Other unskilled laborers	.....	24,316,444	.....	25,183,317	.....	24,339,750	.....	25,525,610
28	Foremen of construction gangs and work trains	.....	385,573	.....	414,995	.....	409,043	.....	435,504
29	Other men in construction gangs and work trains	.....	5,495,415	.....	6,203,812	.....	6,094,356	.....	6,236,869
30	Traveling agents and solicitors	35,853	.....	35,295	.....	33,547	.....	35,014	.....
31	Employees in outside agencies	26,965	.....	25,804	.....	25,361	.....	25,738	.....
32	Other traffic employees	10,160	.....	11,261	.....	10,036	.....	11,519	.....
33	Train dispatchers and directors	.....	1,266,506	.....	1,303,775	.....	1,273,023	.....	1,310,770
34	Telegraphers, telephoners and block operators	.....	4,686,721	.....	4,852,013	.....	4,694,573	.....	4,880,990
35	Telegraphers and telephoners operating interlockers	.....	1,767,716	.....	1,826,077	.....	1,818,478	.....	1,911,941
36	Levermen (non-telegraphers)	.....	913,078	.....	921,364	.....	889,250	.....	941,603
37	Telegrapher-clerks	.....	2,605,280	.....	2,678,429	.....	2,576,838	.....	2,697,274
38	Agent-telegraphers	.....	4,552,146	.....	4,628,131	.....	4,412,929	.....	4,642,576
39	Station agents (non-telegraphers)	397,593	.....	406,522	.....	394,294	.....	409,301	.....
40	Station masters and assistants	18,961	.....	18,659	.....	18,190	.....	18,304	.....
41	Station service employees (except Nos. 5, 6, 37, 38, 39, 40 and 66)	.....	23,282,722	.....	24,465,857	.....	24,167,491	.....	25,727,848
42	Yardmasters	111,701	.....	114,803	.....	113,402	.....	118,470	.....
43	Yardmasters' assistants (not yard clerks)	89,051	.....	87,983	.....	88,355	.....	92,769	.....
44	Yard engineers and motormen	.....	4,113,141	.....	4,288,827	.....	4,221,025	.....	4,548,628
45	Yard firemen and helpers	.....	4,080,644	.....	4,253,900	.....	4,169,747	.....	4,515,982
46	Yard conductors (or foremen)	.....	3,950,611	.....	4,092,512	.....	4,086,242	.....	4,410,928
47	Yard brakemen (switchmen or helpers)	.....	9,465,557	.....	9,810,697	.....	9,791,973	.....	10,702,970
48	Yard switch tenders	.....	1,413,867	.....	1,482,802	.....	1,414,471	.....	1,466,045
49	Other yard employees	.....	1,094,018	.....	1,121,966	.....	1,103,666	.....	1,141,541
50	Hostlers	.....	2,518,097	.....	2,563,185	.....	2,503,726	.....	2,563,346
51	Enginehouse men	.....	17,297,610	.....	17,660,475	.....	16,551,016	.....	17,156,217
52	Road freight engineers and motormen	.....	6,378,342	.....	6,777,663	.....	6,732,136	.....	7,366,429
53	Road freight firemen and helpers	.....	6,399,224	.....	6,824,748	.....	6,800,513	.....	7,359,532
54	Road freight conductors	.....	5,454,037	.....	5,915,073	.....	5,766,293	.....	6,276,685
55	Road freight brakemen and flagmen	.....	13,179,768	.....	14,186,772	.....	13,967,199	.....	15,147,345
56	Road passenger engineers and motormen	.....	2,543,300	.....	2,653,495	.....	2,611,935	.....	2,804,575
57	Road passenger firemen and helpers	.....	2,440,253	.....	2,541,526	.....	2,510,448	.....	2,678,172
58	Road passenger conductors	.....	2,247,678	.....	2,364,492	.....	2,345,072	.....	2,504,709
59	Road passenger baggagemen	.....	1,215,378	.....	1,272,958	.....	1,259,796	.....	1,362,304
60	Road passenger brakemen and flagmen	.....	3,143,919	.....	3,329,657	.....	3,321,208	.....	3,544,158
61	Other road train employees	.....	762,651	.....	781,402	.....	784,196	.....	816,184
62	Crossing flagmen and gatemen	660,445	.....	693,947	.....	670,016	.....	699,031	.....
63	Drawbridge operators	49,597	.....	50,856	.....	49,576	.....	51,761	.....
64	Floating equipment, employees	.....	2,149,937	.....	2,317,097	.....	2,336,726	.....	2,458,460
65	Express service, employees	.....	.....	.....	.....	.....	.....	.....	.....
66	Policemen and watchmen	326,210	.....	340,090	.....	335,165	.....	348,746	.....
67	Other transportation, employees	138,268	.....	147,219	.....	140,565	.....	139,237	.....
68	All other employees	517,038	.....	554,308	.....	548,581	.....	588,449	.....
69	Totals	5,856,568	346,725,884	6,036,026	361,386,473	5,836,664	349,691,699	6,122,435	368,202,810

out taking into consideration the readjustments with the shop crafts, are as follows:

	July, 1919	December, 1917	Calendar year 1917
Average monthly compensation per employee for all employees	$119.38	$89.83	$83.64
Per cent of increase for July, 1919, over December and calendar year 1917	.....	32.9%	42.7%

While the above comparisons and those in the attached statements are made for the periods specified in the Senate resolution, it is important to remark that the view is generally held both by railroad officers and by employees that the wage statistics of the past are not entirely reliable. This is due to the fact that the subject of wage statistics is a matter of more recent development in railroad accounting than other sorts of statistics which have been compiled for a longer period and with greater care. For example, the month of December, 1917, was the first month for which the compilation of wage statistics was required, all former requirements of the Interstate Commerce Commission having been based upon annual requirements. There has been a gradual improvement in the accuracy with which these reports have been made and it is believed that the most recent reports are substantially more accurate than the reports for December, 1917, or for the calendar year 1917, with which comparisons are here attempted.

The Senate resolution calls for the information stated separately as to different classes of railroad employees and statements as below inumerated are attached hereto. It is very important, however, to call attention to the fact that the comparisons between the average compensation for individual classes of employees in 1919 with the single month of December, 1917, or, indeed, with the entire year of 1917, is misleading. To a considerable extent same classes of employees had, prior to December, 1917, obtained reductions in hours (which resulted in their average compensation per hour being substantially increased) or increases in rates of pay, or both, whereas other classes of employees secured corresponding treatment only after December, 1917, so that the disparity in the rates of increase of pay for the different classes of employees is not nearly so great as this

EMPLOYEES AND THEIR COMPENSATION
Class 1 Roads, Under Federal Control
July, 1919, Compared with December, 1917

Item No.	Class of Employee	Number of employees		Days worked		Hours worked		Compensation Amount	
		July, 1919	December, 1917	July 1919	December 1917	July 1919	December 1917	July 1919	December 1917
1 and 2	General officers	7,432	7,452	205,808	208,056	.....	.....	$2,672,523	$2,908,207
3 and 4	Division officers	12,511	11,136	367,898	340,346	.....	.....	3,071,053	1,984,738
5 and 6	Clerks (except No. 37)	216,764	195,097	.....	.....	46,184,264	44,805,376	24,241,123	15,526,105
7	Messengers and attendants	10,122	8,810	284,324	242,015	.....	.....	712,962	389,948
8	Assistant engineers and draftsmen	10,370	10,810	275,949	288,585	.....	.....	1,441,030	1,132,279
9	M. W. & S. foremen (excluding Nos. 10 and 28)	8,119	7,786	220,931	226,174	.....	.....	1,158,393	832,296
10	Section foremen	40 899	39,443	1,154,790	1,138,383	.....	.....	4,424,347	3,084,905
11	General foremen, M. E. department	1,707	1,665	51,039	45,168	.....	.....	442,981	225,917
12	Gang and other foremen, M. E. department	23,592	18,429	670,200	532,500	.....	.....	4,610,063	2,253,167
13	Machinists	59,067	42,973	.....	.....	12,178,870	10,651,011	8,397,900	5,419,490
14	Boiler makers	18,413	13,469	.....	.....	3,916,276	3,411,669	2,720,291	1,719,544
15	Blacksmiths	9,898	8,369	.....	.....	1,981,134	1,878,208	1,349,636	928,293
16	Masons and bricklayers	1,186	1,330	.....	.....	239,603	297,177	136,832	107,576
17	Structural iron workers	673	852	.....	.....	135,541	192,511	88,555	73,420
18	Carpenters	50,854	50,848	.....	.....	10,209,395	11,883,446	5,965,251	4,154,224
19	Painters and upholsterers	12,632	9,878	.....	.....	2,450,992	2,223,531	1,498,650	848,462
20	Electricians	13,200	9,894	353,157	287,368	.....	.....	1,900,387	926,027
21	Air-brake men	7,781	5 846	.....	.....	1,685,990	1,636,349	1,029,975	588,059
22	Car inspectors	24,258	20,763	.....	.....	5,794,623	6,811,054	3,534,628	2,201,447
23	Car repairers	80,417	66,443	.....	.....	16,793,844	15,948,946	9,917,826	5,831,462
24	Other skilled laborers	56,307	55,201	.....	.....	11,990,522	14,030,197	7,440,693	5,244,247
25	Mechanics' helpers and apprentices	107,263	92,018	.....	.....	22,341,446	23,097,913	10,204,313	6,825,060
26	Section men	286,300	212 663	.....	.....	59,165,116	53,320,778	22,274,798	11,372,899
27	Other unskilled laborers	118,932	104,050	.....	.....	25,525,610	27,026,316	10,418,428	6,635,365
28	Foremen of construction gangs and work trains	1,910	2,239	.....	.....	435,504	707,328	244.557	227,718
29	Other men in construction gangs and work trains	30,306	28,651	.....	.....	6,236,869	7,119,116	2,480,285	1,697,182
30	Traveling agents and solicitors	1,355	5,245	35,014	149,383	.....	.....	240,653	809,232
31	Employees in outside agencies	927	1,342	25 738	43,579	.....	.....	130 564	160.659
32	Other traffic employees	426	510	11,519	12,623	.....	.....	70,461	63,831
33	Train dispatchers and directors	5,413	5,158	.....	.....	.....	.....	.....	.....
34	Telegraphers, telephoners and block operators	20,859	20,975	.....	.....	1,310 770	1,328,309	1.234,867	802,874
35	Telegraphers and telephoners operating interlockers	8,243	7,588	.....	.....	4,880,990	5,136.759	2,700,463	1,690.416
36	Levermen (non-telegraphers)	3,926	3,513	.....	.....	1 911,941	1,910,410	1,083.416	648,654
37	Telegrapher-clerks	11,362	11,178	.....	.....	941,603	993,865	491.852	260,794
38	Agent-telegraphers	19,065	19,149	.....	.....	2,697.274	3,052.479	1,468,318	896.806
39	Station agents (non-telegraphers)	13,898	14,411	409,301	452,606	4,642,576	5,848,196	2,662.214	1,675,803
40	Station masters and assistants	605	614	18,304	19,520	.....	.....	1,938,830	1,330,976
41	Station service employees (except Nos. 5, 6, 37, 38, 39, 40 and 66)	115,255	110,647	.....	.....	25,727,848	30,206,592	97,409	66,970
42	Yardmasters	3,905	3,835	118,470	124,312	.....	.....	10,778,339	7,164,361
43	Yardmasters' assistants (not yard clerks)	3,122	3,080	92,769	93,484	.....	.....	966,047	605,839
44	Yard engineers and motormen	19,153	20.355	.....	.....	4.548,628	5,593,160	674,871	418,949
45	Yard firemen and helpers	19,559	20,821	.....	.....	5,515,982	5,639.441	3,354,511	3,025,069
46	Yard conductors (or foremen)	18,785	20,362	.....	.....	4,410.928	5 472,878	2,465.102	1,918,553
47	Yard brakemen (switchmen or helpers)	47,815	50,874	.....	.....	10,702.970	13,139,861	2.988,537	2,640,518
48	Yard switch tenders	6.129	4,841	.....	.....	1.466,045	1.534,079	6,766.231	5,690,199
49	Other yard employees	4,705	3,663	.....	.....	1,141.541	1,180.765	740,127	365,213
50	Hostlers	10,687	8,493	.....	.....	2.563,346	2 859,587	433,439	222,327
51	Enginehouse men	68,685	60 439	.....	.....	17.156,217	19,191,693	1,418,525	941,060
52	Road freight engineers and motormen	30,405	32,923	.....	.....	7 366,429	8.849,605	7,180.685	4,643.739
53	Road freight firemen and helpers	31,608	35,549	.....	.....	7,359,532	8,896,511	6,806,390	6,258,403
54	Road freight conductors	24,501	26,320	.....	.....	6.276,685	7,556,373	4,953,471	4.059,644
55	Road freight brakemen and flagmen	60,525	65.242	.....	.....	15,147.345	18,029,699	4,771.093	4,313,747
56	Road passenger engineers and motormen	12,761	12,826	.....	.....	2.804,575	2,877,377	8,818 391	6,949,781
57	Road passenger firemen and helpers	12,413	12,433	.....	.....	2.678,172	2,778,482	3,272,012	2,584,447
58	Road passenger conductors	10,649	10,607	.....	.....	2 504,709	2,460,948	2,286.297	1.552,220
59	Road passenger baggagemen	5,669	5.532	.....	.....	1,362.304	1,352,449	2,408,764	1,818,760
60	Road passenger brakemen and flagmen	15,636	14,362	.....	.....	3,544,158	3,356,350	920.256	569,554
61	Other road train employees	3,415	3,697	.....	.....	816,184	892,522	2,367,684	1,421,430
62	Crossing flagmen and gatemen	23,069	15,569	699,031	474,942	.....	.....	410,121	276,235
63	Drawbridge operators	1,669	1,267	51,761	41,803	.....	.....	1,815,083	751,899
64	Floating equipment, employees	9,288	8,243	.....	.....	2,458,460	2,517,476	164,813	88,618
65	Express service employees	.....	.....	.....	.....	.....	.....	1,260,040	763,084
66	Policemen and watchmen	11,541	12,275	348,746	389,373	.....	.....	.....	.....
67	Other transportation employees	5,470	5,492	139,237	175,669	.....	.....	1,359,386	962,869
68	All other employees	20,876	18,203	588,449	533,597	.....	.....	533,415	427,405
69	Totals	1,894,287	1,703,748	6,122,435	5,819,486	368,202,810	387,696,788	1,730,778	1,061,011
								$226,140,935	$153,039,988

restricted comparison suggests. The records do not indicate the amount of "punitive" overtime, i.e., for which "time and a half" or more was paid, but it is probably true that in December, 1917, numerous classes of employees were working punitive overtime to a larger extent than in July, 1919, and consequently, the increase in rates of pay for these particular classes of employees has been somewhat more than this restricted comparison would indicate. There have also been numerous reclassifications of employees which materially affect the comparisons mentioned.

The statements submitted with the report, which were compiled by the Operating Statistic Section, are as follows:

Schedule 1. Statement for Class I railroads in federal operation showing the number of employees for the months of December, 1917; January, 1919; February, 1919; March, 1919; April, 1919; May, 1919; June, 1919; July 1919.

Schedule 2. Statement for Class I railroads in federal operation showing the total compensation of employees for the same periods covered by Schedule 1.

Schedule 3. Statement for Class I railroads in federal operation showing the number of days of employees reported on a daily basis and the number of hours of employees

Item No.	Class of Employee	Compensation						Per cent Change in unit Compensation
		Per day			Per hour			
		July 1919	December 1917		July 1919	December 1917		
1 and 2	General officers	$12.99	$13.98	...	...	....	..	*d7*
3 and 4	Division officers	8.35	5.83	...	...	....	..	43
5 and 6	Clerks (except No. 37)			...	$0.525	$0.347	..	51
7	Messengers and attendants	...	....	...	$0.252	$0.347	..	56
8	Assistant engineers and draftsmen	5.22	3.92	...	...	....	..	33
9	M. W. & S. foremen (excluding Nos. 10 and 28)	5.24	3.68	...	...	....	..	42
10	Section foremen	3.83	2.71	...	...	....	..	41
11	General foremen, M. E. department	8.68	5.00	...	...	....	..	74
12	Gang and other foremen, M. E. Department	6.88	4.23	...	...	....	..	63
13	Machinists	...	....	*.730*	.690	.509	*43*	36
14	Boiler makers	...	....	*.734*	.695	.504	*4F*	38
15	Blacksmiths	...	....	*.734*	.695	.504	*46*	38
16	Masons and bricklayers	...	....	...	.571	.362	..	58
17	Structural iron workers	...	....	...	.653	.381	..	71
18	Carpenters	...	....	*.657*	.584	.350	*88*	67
19	Painters and upholsterers	...	....	*.676*	.611	.382	*77*	60
20	Electricians	.538	3.22	...	...	....	*77*	67
21	Air-brake men	...	....	*.651*	.611	.359	*81*	70
22	Car inspectors	...	....	*.700*	.610	.323	*117*	89
23	Car repairers	...	....	*.663*	.591	.366	*81*	61
24	Other skilled laborers	...	....	...	.621	.374	..	66
25	Mechanics' helpers and apprentices	...	....	...	.457	.296	..	54
26	Section men	...	....	...	.376	.213	..	77
27	Other unskilled laborers	...	....	...	.408	.246	..	66
28	Foremen of construction gangs and work trains	...	....	...	.562	.322	..	75
29	Other men in construction gangs and work trains	...	....	...	.398	.238	..	67
30	Traveling agents and solicitors	6.87	5.42	...	...	...	..	27
31	Employees in outside agencies	5.07	3.69	...	...	...	..	37
32	Other traffic employees	6.12	5.06	...	...	...	..	21
33	Train dispatchers and directors	...	....	...	.942	.604	..	56
34	Telegraphers, telephoners and block operators	...	....	...	.553	.329	..	68
35	Telegraphers and telephoners operating interlockers	...	....	...	.567	.340	..	67
36	Levermen (non-telegraphers)	...	....	...	.522	.262	..	99
37	Telegrapher-clerks	...	....	...	.544	.294	..	85
38	Agent-telegraphers	...	....	....	.573	.285	..	101
39	Station agents (non-telegraphers)	4.74	2.94	...	...	...	..	61
40	Station masters and assistants	5.32	3.43	...	...	...	..	55
41	Station service, employees (except Nos. 5, 6, 37, 38, 39, 40 and 66)	...	....	...	.419	.237	..	77
42	Yardmasters	8.15	4.87	...	...	...	..	67
43	Yardmasters' assistants (not yard clerks)	7.27	4.48	...	...	...	..	62
44	Yard engineers and motormen	...	....	...	737	.541	..	36
45	Yard firemen and helpers	...	....	...	.546	.340	..	61
46	Yard conductors (or foremen)	...	....	...	.678	.483	..	40
47	Yard brakemen (switchmen or helpers)	...	....	...	.632	.433	..	46
48	Yard switch tenders	...	....	...	.505	.238	..	112
49	Other yard employees	...	....	...	.380	.188	..	102
50	Hostlers	...	....	...	.553	.329	..	68
51	Enginehouse-men	...	....	...	.419	.242	..	73
52	Road freight engineers and motormen	...	....	...	.924	.707	..	31
53	Road freight firemen and helpers	...	....	...	.673	.456	..	48
54	Road freight conductors	...	....	...	.760	.570	..	33
55	Road freight brakemen and flagmen	...	....	...	.582	.385	..	51
56	Road passenger engineers and motormen	...	....	...	1.167	.898	..	30
57	Road passenger firemen and helpers	...	....	...	.854	.559	..	53
58	Road passenger conductors	...	....	...	.962	.739	..	30
59	Road passenger baggagemen	...	....	...	.676	.421	..	61
60	Road passenger brakemen and flagmen	...	....	...	.668	.424	..	58
61	Other road train employees	...	....	...	.502	.309	..	62
62	Crossing flagmen and gatemen	2.60	1.58	...	...	...	..	65
63	Drawbridge operators	3.18	2.12	...	...	...	..	50
64	Floating equipment, employees	...	....	...	.513	.303	..	69
65	Express service employees	...	....	...	...	....	..	..
66	Policemen and watchmen	3.90	2.47	...	...	...	..	58
67	Other transportation employees	3.83	2.43	...	...	...	..	58
68	All other employees	2.94	1.99	...	...	....	..	48
69	Totals	4.93	3.52	...	.532	.342	..	53

Averages per day and per hour shown opposite class 69, "Totals," are for those classes only whose time worked is reported by days and by hours, respectively.

This report is compiled according to the classification prescribed by the Interstate Commerce Commission in accordance with the Act to regulate commerce, which classification has been the prescribed form since July 1, 1915.

The Interstate Commerce Commission classification sub-divides Items 1 and 2, General Officers, and Items 3 and 4, Division Officers, as between those receiving over and under $3,000 per annum, and sub-divides Items 5 and 6, Clerks, as between those receiving over and under $900 per annum. As the sub-division of these classes on such a basis is purely arbitrary and has no relation to the class of work performed, the sub-divisions are omitted from these reports.

The classification of employees prescribed by the Interstate Commerce Commission and used in the reports does not correspond with the classification of employees used in the wage orders of the Railroad Administration, with the result that employees in a given class (of wage orders) receiving either higher or lower wages may be included with the employees of another class (of the Interstate Commerce Commission classification).

Generally speaking, the averages of a single month present such a restricted view that such figures should be used with the greatest caution.

Speaking specifically, some of the conditions which exemplify this (and it is obviously an exceedingly difficult thing to give in detail all the conditions which would affect the situation) are as follows:

A comparison between the rates of pay in 1919 with the single month of December, 1917, is likely to be misleading because to a considerable extent some classes of employees had, prior to December, 1917, obtained reductions in hours (which resulted in their average compensation per hour being substantially increased) or increases in rates of pay, or both, whereas other classes of employees secured corresponding treatment only after December, 1917, so that the disparity in the rates of increase of pay for the different classes of employees is not nearly so great as this restricted comparison suggests. The records do not indicate separately the amount of punitive overtime, but it is probably true that in December, 1917, numerous classes of employees were working punitive overtime to a larger extent than in July, 1919, and consequently, the increase in rates of pay for those particular classes of employees has been somewhat more than this restricted comparison would indicate.

NOTE.—Italic figures indicate estimate of increase to shopmen in September, 1919, retroactive to May 1, 1919.

d—and *italics*—decrease.

reported on an hourly basis for the same periods covered by Schedule 1.

Schedule 4. Statement for Class I railroads in federal operation showing the average daily compensation for employees reported on a daily basis and the average hourly compensation of employees reported on an hourly basis for the same periods covered by Schedule 1.

Schedule 5. Statement for Class I railroads in federal operation showing the number of employees; number of days worked for employees reported on a daily basis; number of hours worked for employees reported on an hourly basis; total compensation; average compensation per day for employees reported on a daily basis; average compensation per hour for employees reported on an hourly basis for the average for the months of May, June and July, 1919, and for the month of December, 1917, and showing the percentage of increase in the hourly or daily rates comparing the average for the months of May, June and July, 1919, with December, 1917.

Schedule 6. Statement for Class I railroads in federal operation showing the number of employees for the average of the months of May, June and July, 1919; the average monthly compensation per employee for the overage for the months of May, June and July, 1919; for December, 1917; and for the calendar year 1917, together with the percentage of increase for the average of May, June and July, 1919, over the month of December, 1917, and the monthly average for the calendar year 1917.

Schedule 7. Statement for Class I railroads showing comparison by classes of employees and hours worked per employee in December, 1917, and in July, 1919.

In addition there were submitted copies of all orders making advances in wages, and of all schedules explanatory thereof, as requested in the resolution.

In connection with the schedules, attention was called to the fact that inasmuch as certain employees are required to be reported only in days worked, it is not possible to show a precise comparison of the hours worked in each month. In order to present an approximately correct comparison the statement of the number of hours worked was made on the assumption of eight hours per day for the employees whose time is reported on a daily basis (amounting to between 10 and 11 per cent of the total hours of all employees). It was also noted that the classification of employees prescribed by the Interstate Commerce Commission and used in the reports does not correspond with the classification used in wage orders of the Railroad Administration. The number of employees as used in the tables refers to the count as of the 16th day of the month except when that day falls on a Sunday or a holiday, in which case the count is made as of the last preceding business day. It is stated that, generally speaking, the averages of a single month present such a restricted view that such figures should be used with the greatest caution.

The total compensation as shown by Schedule 2 was as follows: December, 1917, $153,039,988; January, 1919, $230,800,589; February, 1919, $204,059,816; March, 1919, $211,228,547; April, 1919, $207,120,939; May, 1919, $218,606,040; June, 1919, $215,271,437; July, 1919, $226,140,935. Schedules Nos. 3, 5 and 6 (with which is combined No. 7), are reproduced herewith.

British Export Credits.—The Board of Trade has announced that the British Government is prepared, through the Export Credits Departments, to consider applications for advances up to 80 per cent of the cost of the goods, plus freight and insurance, for goods sold to Finland, the Baltic provinces (Latvia, Esthonia, and Lithuania), Poland, Czecho-Slovakia, Jugo-Slavia and the areas in Russia to which the scheme for insurance against abnormal commercial risks applies.

Orders of the Regional Directors

EXPORT BILLS OF LADING.—Supplement 1 to Circular 286 of the Central Western regional director states revise paragraph 1 in regard to what officers may issue through export bills of lading when traffic originates with Class 1 Federal controlled roads, the bills will be issued only by the initial road-haul carrier. Other Federal controlled roads, or non-Federal controlled roads may, if in a position to do so, issue through bills of lading, or the bills may be issued by their immediate Class 1 connections; or by port terminal lines through their offices at ports of exit. Through export bills of lading will be issued only by the general freight departments or designated general or commercial agents, district freight agents, export agents or division freight agents, unless other arrangements are specifically authorized.

Forest and Field Fires.—The Northwestern regional director, file 9-1-31, directs that rules for the prevention of forest and field fires, contained In the report of the committee on Conservation of Natural Resources, Section 11—Engineering, American Railroad Association, be put in effect on all railroads.

Demurrage on Coal.—The Northwestern regional director, file 35-1-88, quoting Edward Chambers, director of the Division of Traffic, directs that where coal has been held by the Railroad Administration under the order of the Fuel Administrator and has subsequently been released to a consignee, or to the original consignee, the demurrage rules become applicable from the time of such release.

American Red Cross.—The Northwestern regional director, file 33-1-17, urges that every officer and employee be given an opportunity to take a Red Cross membership for the coming year in view of the great humanitarian work the American Red Cross has performed.

Issuance of Through Bills of Lading.—Supplement 2 to Circular 252 of the Southwestern regional director states that on export forest products agents at shipping points will issue a domestic bill of lading and waybill to the point of trans-shipment, with the following notation: "Inland charges to be collected at port of exit." The terminal road at port of exit will issue through export bill of lading for such shipments in exchange for the initial road's domestic bill of lading, but only after collection of the inland charges.

Transportation of Bananas.—The Southwestern regional director, in Circular 253, states that messengers accompanying bananas in transit have no authority to sell or remove any of the freight from any car. Violations of this rule will be prosecuted. It does not conflict with tariff provisions for stopping in transit to partly unload, as stipulated on the way bill.

Interchange Records.—Supplement 1 to Circular 250 of the Southwestern regional director amends paragraph 5 of the original circular to require that the original copy of the monthly statement should be sent to J. W. Smith, manager, Car Hire Bureau, Buffalo, N. Y., instead of to W. G. Kendall, manager, Car Service Section, Washington, D. C.

Permit System for Grain Shipments.—Supplement 16 to Circular 270 of the Central Western regional director states that effective November 10, a blanket basis of permits was substituted for individual permits for shipments of grain from country stations to interior primary markets. Individual permits will be required for shipments between primary markets.

Merchandise.—Car Conservation.—Circular 256 of the Southwestern regional director states that statistics show that practically one half of all the box cars of the entire country are continuously used in handling L. C. L. traffic and that it is of the greatest importance, therefore, that every effort be made to increase the supply of cars for use in handling carload traffic by increasing the number of through merchandise cars.

President Will Address Congress on Railroads

Message on December 2 Related to Domestic Problems and Largely to the Labor Question

WASHINGTON, D. C.

SOME SURPRISE WAS CAUSED by the President's failure to include a discussion of the railroad question in his message to Congress at the beginning of the regular session on December 2, because it was hoped he would make a more definite announcement regarding the return of the railroads than his rather casual statement of last May that they would be relinquished at the end of the year. He said, however, that "in the matter of the railroads and the readjustment of their affairs growing out of federal control," he would address the Congress at a later date. The President will defer this message until after receiving a report from Director General Hines who was to confer with Chairman Cummins and Esch of the Congressional Committees on Interstate Commerce. Mr. Hines talked with Senator Cummins on Wednesday.

While the Railroad Administration has for some time been making active preparations for the return of the roads and plans for the organization it will retain to wind up its affairs, and has even allowed some of its officers who are to return to their former positions an opportunity to devote some time to their own preparations for the return to company management, the officers of the Railroad Administration in referring to the prospective relinquishment have usually been careful to make a reservation for "contingencies" and a plain statement from the President would be accepted with considerable relief.

The message was devoted entirely to domestic problems and repeated recommendations made at the last session, including those urging action to help reduce the cost of living. A large part of the message was devoted to the labor problem, which is of acute interest to the railroads at this time, but the President did not apply his remarks specifically. He particularly emphasized the need for the establishment of some acceptable tribunal for adjusting the differences between capital and labor, but while his statements were in sympathy with many of the principles urged by the labor organizations they can hardly find much support for their opposition to proposed legislation for compulsory arbitration in his statement that "the right of individuals to strike is inviolate and ought not to be interfered with by any process of government." No one is proposing to interfere with "individual" strikes and moreover, the President followed this statement immediately with the declaration that "there is a predominant right and that is the right of the government to protect all of its people and to assert its power and majesty against the challenge of any class."

The president's statement regarding the labor problem was in part as follows:

"No one who has observed the march of events in the last year can fail to note the absolute need of a definite programme to bring about an improvement in the conditions of labor. There can be no settled conditions leading to increased production and a reduction in the cost of living if labor and capital are to be antagonists instead of partners. The failure of other nations to consider this matter in a vigorous way has produced bitterness and jealousies and antagonisms, the food of radicalism. The only way to keep men from agitating against grievances is to remove the grievances. An unwillingness even to discuss these matters produces only dissatisfaction and gives comfort to the extreme elements in our country which endeavor to stir up disturbances in order to provoke governments to embark upon a course of retaliation and repression. The seed of revolution is repression. The remedy for these things must not be negative in character. It must be constructive. It must comprehend the general interest. The real antidote for the unrest which manifests itself is not suppression, but a deep consideration of the wrongs that beset our national life and the application of a remedy.

"Congress has already shown its willingness to deal with these industrial wrongs by establishing the eight-hour day as the standard in every field of labor. It has sought to find a way to prevent child labor. It has served the whole country by leading the way in developing the means of preserving and safeguarding lives and health in dangerous industries. It must now help in the difficult task of finding a method that will bring about a genuine democratization of industry, based upon the full recognition of the right of those who work, in whatever rank, to participate in some organic way in every decision which directly affects their welfare.

"The great unrest throughout the world, out of which has emerged a demand for an immediate consideration of the difficulties between capital and labor, bids us put our own house in order. Frankly, there can be no permanent and lasting settlements between capital and labor which do not recognize the fundamental concepts for which labor has been struggling through the years. The whole world gave its recognition and endorsement to these fundamental purposes in the League of Nations. It is, therefore, the task of the statesmen of this new day of change and readjustment to recognize world conditions and to seek to bring about, through legislation, conditions that will mean the ending of age-long antagonisms between capital and labor and that will hopefully lead to the building up of a comradeship which will result not only in greater contentment among the mass of workmen but also bring about a greater production and a greater prosperity to business itself.

"To analyze the particulars in the demands of labor is to admit the justice of their complaint in many matters that lie at their basis. The workman demands an adequate wage, sufficient to permit him to live in comfort, unhampered by the fear of poverty and want in his old age. He demands the right to live and the right to work amidst sanitary surroundings, both in home and in workshop, surroundings that develop and do not retard his own health and well-being; and the right to provide for his children's wants in the matter of health and education. In other words, it is his desire to make the conditions of his life and the lives of those dear to him tolerable and easy to bear.

"The establishment of the principles regarding labor laid down in the covenant of the League of Nations offers us the way to industrial peace and conciliation. No other road lies open to us. Not to pursue this one is longer to invite enmities, bitterness, and antagonisms which in the end only lead to industrial and social disaster. The unwilling workman is not a profitable servant. An employee whose industrial life is hedged about by hard and unjust conditions, which he did not create and over which he has no control, lacks that fine spirit of enthusiasm and volunteer effort which are the necessary ingredients of a great producing entity.

"Governments must recognize the right of men collectively to bargain for humane objects that have at their base the mutual protection and welfare of those engaged in all industries. Labor must not be longer treated as a commodity. It

must be regarded as the activity of human beings, possessed of deep yearnings and desires. The business man gives his best thought to the repair and replenishment of his machinery, so that its usefulness will not be impaired and its power to produce may always be at its height and kept in full vigor and motion. No less regard ought to be paid to the human machine, which after all, propels the machinery of the world and is the great dynamic force that lies back of all industry and progress. Return to the old standards of wage and industry in employment are unthinkable. The terrible tragedy of war which has just ended and which has brought the world to the verge of chaos and disaster would be in vain if there should ensue a return to the conditions of the past. The right of labor to live in peace and comfort must be recognized by governments and America should be the first to lay the foundation stones upon which industrial peace shall be built.

"Labor not only is entitled to an adequate wage, but capital should receive a reasonable return upon its investment and is entitled to protection at the hands of the government in every emergency. No government worthy of the name can "play" these elements against each other, for there is a mutuality of interest between them which the government must seek to express and to safeguard at all cost.

"The right of individuals to strike is inviolate and ought not to be interferred with by any process of government, but there is a predominant right and that is the right of the government to protect all of its people and to assert its power and majesty against the challenge of any class. The government, when it asserts that right, seeks not to antagonize a class but simply to defend the right of the whole people as against the irreparable harm and injury that might be done by the attempt by any class to usurp a power that only government itself has a right to exercise as a protection to all.

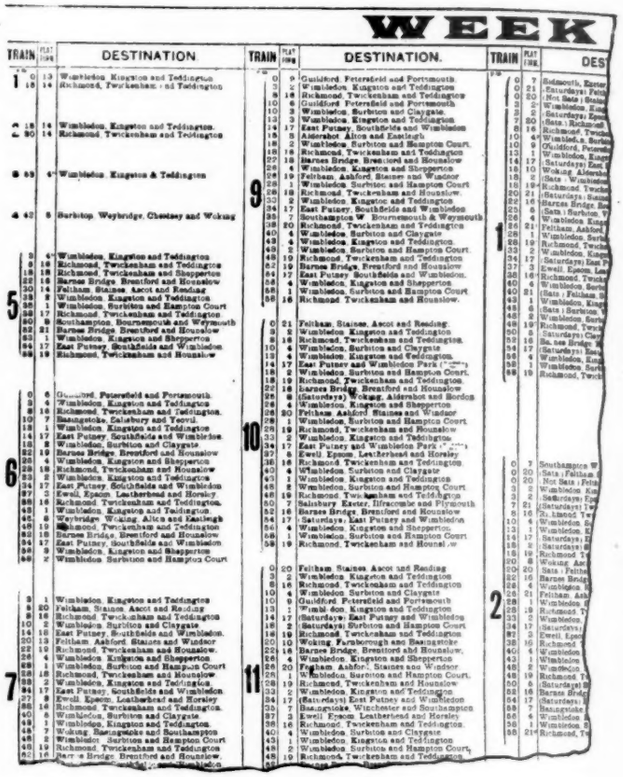
"In the matter of international disputes which have led to war, statesmen have sought to set up as a remedy arbitration for war. Does this not point the way for the settlement of industrial disputes, by the establishment of a tribunal, fair and just alike to all, which will settle industrial disputes which in the past have led to war and disaster?

"There are those in this country who threaten direct action to force their will upon a majority. Russia today, with its blood and terror, is a painful object lesson of the power of minorities. It makes little difference what minority it is; whether capital or labor, or any other class; no sort of privilege will ever be permitted to dominate this country. We are a partnership or nothing that is worth while. We are a democracy, where the majority are the masters, or all the hopes and purposes of the men who founded this government have been defeated and forgotten. In America there is but one way by which great reforms can be accomplished and the relief sought by classes obtained, and that is through the orderly processes of representative government. Those who would propose any other method of reform are enemies of this country. The instrument of all reform in America is the ballot. The road to economic and social reform in America is the straight road of justice to all classes. Men have but to follow this road to realize the full fruition of their objects and purposes. Let those beware who would take the shorter road of disorder and revolution. The right road is the road of justice and orderly process."

FELTON ENGINEERING PRIZE.—Samuel M. Felton, president of the Chicago Great Western Railroad, has established a prize at the Pennsylvania Military College, to be awarded annually to the student who has led his class in the study of engineering subjects for the junior and senior years. The gift will be known as the Felton engineering prize. Mr. Felton was a student in the college from 1868 to 1870.

Departure Poster, Waterloo Station

AT Waterloo station, London, on the London & Southwestern Railway the large bulletin, showing the numbers of the platforms from which passenger trains make their departure, is now printed in a novel style, illustrated in the engraving. The hour numeral being shown in bold figures greatly facilitates the location of the section of the poster which a passenger may desire to consult.



The part here shown includes about one-fourth of that section of the poster devoted to week-day trains.

The list of trains departing between one o'clock and two o'clock in the afternoon is abnormally long because of the inclusion of a number of trains which run only on Saturdays. The list of those between five and six o'clock in the afternoon shows 40 trains, departing from 16 platforms.

Scenes on the Government's Alaska Railroad. Mile 24, Matanuska Branch

Burleson Finds Railway Mail Service "Perfect"

WASHINGTON, D. C.

THE ANNUAL REPORTS of government departments which come out in great volume about December 1 are ordinarily rather dry reading, but occasionally they contain some news. The report of the postmaster general contains an example which will be of great interest to all who have had much experience with the mails during the past year or two. In connection with its discussion of the railway mail pay question and the inauguration of the space basis plan of compensating the railroads which was put in operation on November 1, 1916, the report says:

"So carefully were plans of the post office department worked out and so flexible was the new system of space that during the trying war period, notwithstanding it was subjected to the severest test, when the freight and express agencies broke down and laid embargoes on shipments practically throughout that period, the post office department was the only transportation medium that functioned unrestricted and transported not only the great normal parcel post load but an immense additional parcel post load thrown upon the department through the internal breakdown of these other agencies. This tremendous task was performed without interruption and with dependability and despatch except in so far as it was handicapped by the very irregular train schedules and the reduction of train speed and withdrawal of trains by the railroads as necessitated by the exigencies of war."

The report does not attempt to explain why the freight and express agencies, which were also under government control, broke down in spite of the increases in freight and express rates, but the inference is that the reason why they did not also perform a perfect service was that they were not under the management of the post office department which, the report says, was able to get its railroad transportation, for the fiscal year ending June 30, 1919, for $54,563,534.49 with a largely increased volume of mail, whereas the cost of transporting the mails by railroads for the fiscal year ending June 30, 1916, was $62,176,943.05.

"Notwithstanding the disruption of railroad schedules," the report says, "the railway mail service has functioned perfectly. The proof of this is that there was less unworked mail in the railway mail service during the year than in any previous year of which there is a record and a comprehensive investigation has shown that no serious delay to mail of any character occurred in the railway mail service during the year."

Since the close of the war the department notes a gradual improvement in the operation of railroad train schedules. A number of the trains which were withdrawn or discontinued during the war period have been restored and the schedules of others have been shortened and otherwise modified so as to furnish better connections for the transmission of mails. The passenger service, however, it says, is not as efficient as it was prior to the war and there is still an insistent demand on the part of business interests throughout the country for adequate service. The report adds that the "railroad companies" (*sic*) are now more responsive to the demands of the business interests and the post office department and it is hoped that shorter schedules will be put into effect and additional trains provided as rapidly as circumstances will permit. It should be added, it says, that the postal transportation service is limited to the facilities afforded by passenger train service, over which the post office department has no control.

The space basis plan is described as "a scientific and business-like method of railway mail pay" that "enables the department to pay for what it receives and the railroads to receive what they earn, which was not possible under the old system of average weights taken once in four years. As a result of the advantages of the new system the department was enabled during the war period to remit to the railway companies for other transportation work 72,906,490 car miles per annum no longer needed for mail transportation. This, reduced to a 60-foot car basis, means 15 trains of 10 cars each running every day between Chicago and New York." The report does not say that these 15 trains were actually run nor does it explain how the mail cars which it had previously required the railroads to buy were made useful for the transportation either of troops, coal or other war materials. It says that this great saving was accomplished through scientific loading of cars, rational rearrangement of letter distribution on cars, and the elimination of despatches of mail at periods when such despatches by reason of trains not making direct connections failed to expedite the delivery of mail.

The scope of the authorized service on space and weight basis routes combined, as of June 30, 1919, is stated as follows: Number of routes, 2,897; length of routes, 259,580.7 miles; annual travel (including emergency service), 519,674,375.69 miles; annual rate of expenditure, $51,086,238.68; average rate of cost per mile of route, $196.80; average rate of cost per mile of travel, 9.83 cents.

The annual rate of regular authorizations on space basis routes, which on June 30, 1918, was $52,022,070.43 had on June 30, 1919, been reduced to $49,918,031.16. The lowest annual rate of authorized service since the inauguration of the space basis system — $47,706,842.46 — was reached during the December quarter and, the report says, "it is obvious, therefore, that transportation requirements have been gaged and adjusted to the needs of the service."

In the investigation before the Interstate Commerce Commission as to the proper basis for paying railroads for carrying the mails and as to the fair and reasonable rates for such service, extensive hearings were held in Washington on November 4, 1918, January 7 and from April 8 to May 6, 1919, after which arguments were had before the commission. The report says the department believes that the space basis plan has been thoroughly justified and that its contentions with reference to rates have been sustained. The decision and order of the commission is looked for at an early date.

In describing the method of shipping blue tag mail "by fast freight," the report says that since the cessation of the war activities the railroads have been able to maintain their schedule of fast freight movements with regularity and but few complaints of delays have been received which were attributable to the movement of this matter by freight. Twelve requests were received from publishers for exemption of their publications from the blue tag freight movement, seven of which were approved by the department. The total shipments of periodicals (blue tag matter) by fast freight during the fiscal year consisted of 2,684 carloads at a cost of $866,639.63. This represents a saving to the department as compared with the cost of carrying it in the regular mails of approximately $498,857.65.

In the more detailed part of the report it is admitted that "in common with practically all other activities of a kindred nature, both governmental and private, employing large quantities of labor and dependent upon railroad transportation for success during the war, the postal service unavoidably deteriorated in some localities to a certain extent from the high standard previously maintained. This was a natural and inevitable effect of the war, due to conditions over which the department had no control, including impaired train service, loss of highly trained employees, inability to obtain competent clerical assistance to fill vacancies and delay in the receipt of equipment and supplies. Coupled therewith, in addition to handling a greatly increased volume of postal

business and the provision of adequate postal facilities for the great army camps established throughout the country, the department, owing to its extensive organization, was called upon to perform for other branches of the government innumerable duties wholly foreign to the postal service, but which were vital to the successful prosecution of the war. Notwithstanding these handicaps the postal service was continued throughout ths critical period without curtailment or restriction of any character."

Railroad Bill Taken Up in Senate

CONSIDERATION of the Cummins bill for the reorganization of the railroads and for their regulation after their return to private management was begun in the Senate on Tuesday as the unfinished business before the Senate, which gives it the right of way over most other matters.

Chairman Cummins of the committee on interstate commerce, spoke for two afternoons explaining the provisions of the bill and urging the necessity for prompt action upon it in an effort to get it passed before the end of the year. He was frequently interrupted by Senators, although scarcely more than a dozen remained in the chamber, and apparently had considerable difficulty in getting them to understand his explanations of the complicated financial transactions and accounts between the railroad companies and the Railroad Administration. He said that Congress would have to appropriate at least $625,000,000 to settle the accounts of the Railroad Administration and possibly $330,000,000 more if it became necessary to return to the railroads the amount of working capital that was taken over at the beginning of federal control. He also expressed the opinion that 25 years of litigation would be required to settle the claims of the railroads against the government and the government's counter claims. He said the government's actual loss from the operation of the railroads for two years was estimated by the Railroad Administration at $646,000,000, but he would not predict that the amount would be greater after taking into consideration the deferred maintenance. Some roads, he said, would be returned in better condition than when they were taken over, while many would be in worse condition.

Senator Cummins recently filed with the Senate a supplemental report giving estimates and an explanation of the accounts between the government and the railroads by Swagar Sherley, director of the Division of Finance of the Railroad Administration, which included the following statement, giving a comparison of the amounts to be funded and appropriated under the provisions of the Cummins bill, the Esch bill as it was introduced and the plan proposed by the Division of Finance, which was later adopted by the House in an amendment to the Esch bill:

COMPARISON OF AMOUNTS TO BE FUNDED

[(1) Under the provisions of Senate Bill No. 3288. (2) Under the provisions of H. R. 10453 (as introduced). (3) Under the provisions of the section originally submitted by the Division of Finance of the Railroad Administration permitting offsets in accordance with the provisions of the standard contract.]

	Class I roads	Senate Bill No. 3288	H. R. 10453	Standard contract
1.	Total cost of additions and betterments (excluding allocated equipment	$775,551,000	$775,551,000	775,551,000
2.	Amount that may be deducted therefrom account compensation or open account due company.....	223,823,000	133,911,000	415,016,000
3.	Net amount of additions and betterments (excluding allocated equipment) to be funded.....	551,728,000	641,640,000	260,535,000
4.	Open account due Government, to be evidenced by demand notes	158,884,000	16,876,000	105,646,000
5.	Long-term loans (including N. Y., N. H. & H. R. R. and Boston & Maine...	68,375,000	68,375,000	68,375,000
	OTHER PROPERTIES			
6.	Additions and betterments and open account due Government to be funded	53,000,000	53,000,000	53,000,000
7.	Total amount of funded and demand indebtedness (exclusive of allocated equipment)	831,987,000	779,891,000	587,556,000
	OTHER REQUIREMENTS			
8.	Allocated equipment not covered by equipment trust.	172,345,000	172,345,000	172,345,000
9.	Additions and betterments—inland waterways	14,342,000	14,342,000	14,342,000
10.	Operating loss—24 months —all properties (note 2).	646,777,000	646,777,000	646,777,000
11.	Total requirements.....	1,665,451,000	1,613,355,000	1,421,020,000
12.	Appropriations already made	1,250,000,000	1,250,000,000	1,250,000,000
13.	Appropriations now required (note 1)	415,451,000	363,355,000	171,000,000

Note 1.—The foregoing estimate is predicated upon the conversion into cash of all assets of the Railroad Administration, other than those shown above as being carried. In point of fact, in dealing with figures as large as these and matters as complicated, it will necessarily follow that there will be a considerable amount of assets of the government subsequently convertible into cash that can not be immediately realized, or even realized contemporaneously with the need of paying out an account of liabilities of the government.

It is safe to estimate that this amount will be at least $200,000,000, so that, practically, to carry out the requirements under the Senate or House bill, or the substitute proposal in accordance with the existing standard contract, the Congress should appropriate a sum at least $200,000,000 in excess of that stated in item 13.

Note 2.—The operating loss shown above represents an estimate for the two years of federal control of the amount by which the net operating income of the railroads fell short of the standard return, estimated amount of interest on accounts due from the government to the railroad companies, and on accounts due from the railroad companies to the government; and is predicated on the present basis of earnings, the latest available figures on an actual basis being for the month of August, 1919, so that for the last four months the figures are necessarily speculative.

The operating loss also includes an estimate of $95,000,000 on account of adjustment of materials and supplies, under provisions of the standard contract. It should be added that beyond these things there are various matters that will reach adjustment, and a status sufficient to enable them to be stated in money only after presentation and determination of claims, respectively, by the government and the railroads, touching many items incident to federal control; so that in particular the items of operating loss must be considered as subject to considerable change in amount because of the subsequent bringing into it of debits and credits which can not now even be approximated.

In describing the proposed plan for the reorganization of the railroads in order to group them into systems of approximately equal earning power, Senator Cummins said he looked forward with very little optimism to private ownership and operation of the railroads but that he proposed to do his best to create conditions under which it could be successful. If the railroads cannot be returned under conditions which will result in an improvement in the system of railroad regulation which will give them a chance for a success, then he would feel obliged to favor government ownership although he was opposed to government ownership because he believed it would result in less efficient operation than private management. But without the provisions of the bill providing for the reorganization of the railroads, he said, it would not be advisable to pass the bill at all because it would be impossible for private management to succeed and the experiment would end in utter collapse.

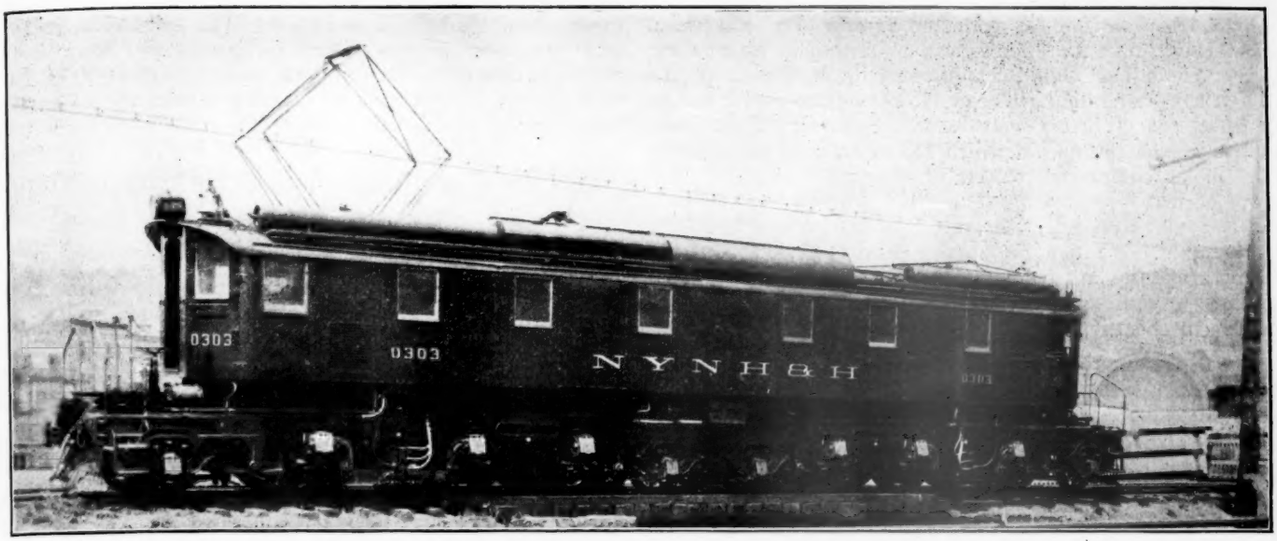
In the House Representative Sims reintroduced his bill providing for an extension of federal control until December 31, 1921, with an added provision to prevent increases in rates being put into effect without consent of Congress.

Chairman Good of the House committee on appropriations is reported to have announced that a bill to provide an appropriation for settling the accounts of the Railroad Administration will probably be considered soon. He estimated the amount at possibly $400,000,000 but expected to confer with Director Sherley of the Division of Finance on the subject.

Congress is being flooded with petitions and resolutions of various lodges of railroad labor organizations protesting against the provisions of the Cummins bill and urging a two-year extension of the present federal control.

Director General Hines conferred with Senator Cummins on railroad legislation on Wednesday.

LUMBER IMPORTS.—During the first eight months of 1919 an aggregate of 760,554,000 board feet of lumber, or an average of about 95,000,000 feet a month, was imported into the United States, duty free, from various foreign countries. Nearly all of this came from British Columbia.



One of the 180-ton Baldwin-Westinghouse Locomotives Built for the New York, New Haven & Hartford

The Use of Electrical Energy on the Railroads

Application of Electricity to the Operation of Railroad Equipment Is Being Greatly Extended

THE MANY APPLICATIONS of electrical machinery to railroad service were treated in five papers presented at the fifteenth annual electrical night of the New York Railroad Club. The program was a departure from the usual one in which electric traction has been the only topic under discussion. The papers presented touched on the use of electricity in all its ramifications.

There were 625 members and visitors present which was the largest attendance on record at any previous meeting except for a patriotic rally last year at which the attendance was about 750. Six papers were prepared, five of which were read. The subject of Electric Shop Power and Light was to have been covered by J. L. Minick, foreman, electrical department, Pennsylvannia Lines East, but he was unable to attend the meeting and his paper, prepared in the form of notes, was therefore not transcribed. An abstract of the other five papers follows:

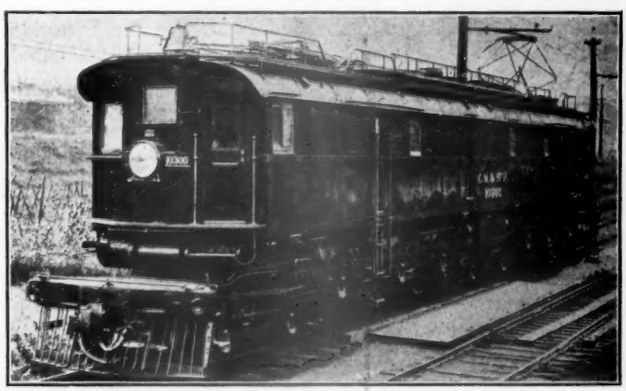
Electrification of Steam Railroads in 1919

By Edwin B. Katte

Chief Engineer Electric Traction, New York Central

First of importance comes the electrical extension of the Chicago, Milwaukee & St. Paul from Othello to Seattle, a distance of 127 miles over the Casacde range of mountains. This work is pratcically complete and is in partial operation, full service is delayed pending the delivery of the passenger locomotives. The system is 3,000 volt direct current with a double overhead working conductor or trolley, exactly the same as the existing and very successful 440 miles now in its third year of operation on the Rocky mountain and Missouri divisions.

The most interesting thing about this extension is two new types of passenger locomotives which are just ready for service. These locomotives are designed to operate a 950-ton train at 65 miles an hour on level track and to average 25 miles an hour over 18 miles of average 2.2 per cent grade and 20 miles of average 2 per cent grade. The Westinghouse Electric & Manufacturing Company will supply ten locomotives, each weighing 275 tons; the drive is through gears and quills by six twin motors of 700 h. p. each. The General Electric Company will supply five locomotives, each weighing 265 tons, and equipped with twelve bi-polar gearless motors of 270 h. p. each. One locomotive of each type has been completed and tested, and the balance of each order is well under way, so that soon after the new year, all 15 of these locomotives will be in service. The table shows the more important and complete data.



Baldwin-Westinghouse 275-ton Electric Locomotive. Ten Locomotives of this Type Will Be Used on the Rocky Mountain Electrified Division of the Chicago, Milwaukee & St. Paul

	Westinghouse	Electric
Total weight	275 tons	265 tons
Weight on drivers	168 tons	220 tons
Number and horsepower of motors	12-350 H. P.	12-270 H. P.
Total H. P. one hour rating	4,200 H. P.	3,240 H. P.
Tractive effort, one hour rating	66,000 lb.	46,000 lb.

New Haven Passenger Locomotive

While describing passenger locomotives, I must mention the new electric locomotives of the New Haven which are

d signed to haul 900-ton trains in express service between New Haven and the Pennsylvania Terminal, New York City, over the Hell Gate Bridge Connecting Railroad, operating either alternating current at 11,000 volt overhead trolley or direct current at 600 volts on the third rail. Each locomotive weighs 180 tons of which 115 tons are on the drivers. The motor equipment consists of six twin motors of 170 h. p. normal rating each. The drive is through gears and quills. The total one-hour rating of the motors is 2,000 h. p. and at this rating, the tractive effort is 21,000 lb. The motor armatures are permanently connected in four groups of three in series. Several of these locomotives are now in successful operation.

Pennsylvania Freight Locomotive

A description of recent electric locomotives, be it ever so brief, would be incomplete without recalling that the engineers of the Pennsylvania and the Westinghouse Electric Company have developed and tested an electric freight locomotive weighing 250 tons for service over mountain grades. This locomotive, known as No. 3931, was tried out in June, 1917, and after the usual test track trials was put in regular freight service between Philadelphia and Paoli, where to date it has traveled about 5,000 miles. The electric equipment is designed to operate on 11,000 volts single-phase current, taken from an overhead trolley wire. At each end of the locomotive there are a pair of motors, each driving a jack shaft, the power being transmitted through springs and side rods to a set of three driving axles. The combined one hour rating of the motors is 4,800 h. p. and at this rating the tractive effort is 87,200 lb. The maximum speed is 20.6 miles per hour.

Electrification of the Melbourne Suburban System

Not only in this country have things been happening electrically on steam railroads during the past year, but also in other countries, notably Australia. The electrification of the metropolitan railway system of Melbourne was put in service last May.

In 1908, C. H. Merz, the distinguished English authority on electric railroading, first reported favorably on the electrification of the Melbourne suburban section of the Victorian Railway System. Proposals were received in 1912, based upon a single-phase 11,000 volt alternating current system, and other proposals upon the 1,500 volt direct current system. Under both methods the propulsion current was to be collected from an overhead catenary trolley supported by steel masts or bridges. It is reported that the single-phase scheme would cost 23 per cent more than the direct current, and it was estimated that the single-phase system would cost 21.7 per cent more in annual operation. Hence, the adoption of high voltage direct current. The delay in completing this work is attributed to war conditions.

The service is entirely suburban and the longest individual line extends a distance of 26 miles from the terminal. Trains running beyond the electric zone are drawn by steam locomotives. Multiple unit cars are used and they are of the compartment type with cross seats and wide side doors, following the usual English practice. The installation includes a large modern power station with two boiler rooms, set at right angles to the turbine room, much like the Fisk Street station of the Chicago Edison Company. The ultimate capacity of the turbine room is six 12,000 k. w. generators. This generating station is regarded as the nucleus of a scheme that will make available cheap electrical energy for future industrial development throughout the state of Victoria.

The electric power is transmitted at 20,000 volts. The transmission system is part underground cables and part aerial carried on the steel masts of the trolley system. There are 15 substations in the complete electrification scheme. Of these, seven are now in operation. The substations are in unit form and contain static transformers and rotary converters to change the transmission current from 20,000 volts, three-phases, 25 cycles, to the working current of 1,500 volts direct current on the trolley wire.

Electric Automechanical Freight Handling

By Zenas W. Carter

Secretary-Treasurer, The Material Handling Machinery Manufacture's Association

The railroads are to go back into private hands. The first problem executives and managing heads of all departments of railroading must face and work to solve is that of costs; both cost for materials and costs for manual service. The second problem is labor shortage; the third problem is lack of equipment; the fourth problem is condition of equipment; and last, but not least, is "attitude and productiveness of the entire personnel from the section hand to the directing chief."

Unfortunately, under government ownership and especially on account of the war re-action which is influencing men so strangely, there has been little serious attempt on the part of the operating and working forces to keep down costs. Further, man-power shortage is the natural result of the war. This same cause may be given as the reason for lack of railroad equipment and condition of equipment. Depreciation in productiveness is partly psychological and partly the result of the sudden increase in the distribution and rotation of money among the masses. Rotation of money tends to develop a sense of luxuriousness which directly results in a slacking of effort.

Knowing the problem and the factors of the problem is half the solution, however, and the real work for the railroad executive is the application of methods which will change the factors into a co-ordinated unit. It is possible therefore to visualize electric automechanical freight handling as a very important method which may be used to change the factors of high costs, labor shortage, lack of equipment, etc. We may even conceive that used thus, electricity may be the collodial to improve both the attitude of the individual toward his labor and to increase his productiveness. To visualize this it is only necessary to consider the changes electricity has already made in our daily life, and to make the application specific as it relates to the use of electricity in new ways in railroad progress, it is only necessary to check over the present activity at some few points. For instance, few men in this country, even in the railroad lists, are familiar with the fact that the British Government is right now considering very seriously the elimination of every one of the 74 freight yards and stations in the city of London.

The Gattie System

The idea is to combine the entire interchange of all freight both carload and l. c. l. into one immense central freight station and distributing point. This would be absolutely impossible without electricity as the all-powerful, infinitely flexible force with which to operate. When such an idea is even mentioned the average man simply must smile to himself and look to assure himself that the man who makes the statement is not a victim of shell shock. Nevertheless, this scheme, known as the "Gattie System," has received the consideration of the government and financial and business interests and although an unusual one it is not at all an impractical proposition.

Mr. Gattie has worked out every detail from planning an immense depressed area of 30 acres to be known as the "Crypt" to the detail of the floor section and stalls on each of the planned nine stories of a gigantic fifteen acre freight station. The "Crypt" will be used for all incoming trains

and in making up trains to travel over all lines radiating in and out of London.

Of course the use of gondola cars in England—much smaller cars than in America—has made his plan workable, and he is to utilize the flexibility of electricity throughout to operate 196 powerful overhead electric traveling cranes, supplemented by a system of conveyors. The entire plant being planned to handle heavy loads in bulk. The cranes will lift uniform containers bodily from the platform of a car on the London & Northwestern say, and take it over and place it on the platform of a car on the Great Eastern. This will eliminate the present need for that car to pass through dozens of switches and suffer from four to ten days delay in its transfer across London.

In the handling of l. c. l. freight the containers are lifted bodily and taken to one of the four distributing floors. All goods, as they term freight in England, will then be handled from these central distributing floors to every part of that tremendous station by electrically operated conveying systems, oscalators, elevators, chutes and electric trucks and trailers. Each lot goes from the central distributing floor directly to stalls where are particular containers for each railroad station or group of small stations. These containers filled with goods for one particular town will be lifted from the car platform by local cranes when the train reaches that town. The car platform then empty, may be at once utilized for a local container which has been previously loaded at that station just as we now load a box car with l. c. l., and the local traveling crane will place the container on the empty car platform and the train may then proceed towards its destination.

It will take just a little reflection to completely bring to your mind's view just what is necessary in the way of electric automechanical freight handling equipment to completely handle a system of this kind. Certain it is, however, that it is all-possible through the use of electrically operated shuttle cars, electric traveling cranes, electrically operated conveyors or both the overhead trolley and the belt and apron and gravity types, and automatic elevators, and electric trucks and trailers.

The result of using such a system will be great economy, the release of the great spaces now used for yards and switch storage tracks and freight stations and it is figured that the value of the 74 stations will be much greater than the entire cost of the proposed gigantic station. This would also solve much of the problem of reducing freight handling costs, labor shortage and equipment shortage. In addition the psychological effect upon groups of men operating machinery under sanitary and healthful conditions in all kinds of weather, and with a minimum of physical effort, is certain to be such as to change their very attitude toward this work, while the synchronization of the whole would automatically speed up the productivity of each worker. What is still more important it would tend to give both regularity of hours of toil and continuity of employment, with a resultant uplift in the mental calibre of the men employed which would be incalculable.

Freight Handling System for Cincinnati

Just to prove that electricity right here in the United States is going to help solve the coming problem of the railroad executives and managers and employees of the railroads in the United States—all the railroads of Cincinnati, Ohio, have made arrangements with a private operating company for the installation of a patented system of terminal operation. This company has almost completed all the installation of the electrically operated machinery necessary to carry out its method of handling l. c. l. freight at Cincinnati, and it is my opinion this or a similar system is going to revolutionize the transfer point interchange of l. c. l. freight all over the United States.

Starting from the results which will accrue at Cincinnati and working back to the principles of operation, the facts seem almost as revolutionary at first as the "Gattie System" will be in England. For instance, this Cincinnati plan to handle freight by automechanical methods, using electric and gas motor trucks and machines instead of steam coal, switch engines, engine and switch train crews, and switches, is estimated to release 66,000 freight cars previously used exclusively in "spotting," transfer, trap, or ferry service in the Cincinnati terminal territory. There is problem one, two, three and four met in a way which at first tends to stagger even our American imagination. Cost is reduced; equipment both released and saved from deterioration, and labor shortage overcome.

But that is only part of the saving. The complete motorization of Cincinnati l. c. l. will save the railroads entering that city just about 300,000 switch cut movements per year, and also will extend existing terminal facilities over 30 per cent and make a reduction of 25 cents per ton in handling costs. All at the insignificant cost to the railroads of approximately $150,000. Furthermore, to date over 140,000 tons of general classification merchandise freight have been moved without a single loss or damage claim resulting, and the current movement of all connecting line and substation freight has been greatly facilitated. Thus electricity functions tremendously as a force to help overcome these five problems of railroad management at Cincinnati.

The detail of the operation at Cincinnati is not a new untried scheme as it has been under practical every-day test for almost two years between main and sub-stations of the Big Four. The actual figures resulting from the tests were used in making the estimates for the complete plants now being installed. The system is a combination of motor trucks, overhead electric traveling cranes and uniform containers, with which will ultimately be combined many forms of mechanical handling machinery such as industrial electric trucks, stacking and tiering machines, portable conveyors, and other electrically operated devices which reduce physical labor and tend to improve the morale of the men who serve in the handling of freight.

It is the combination which is the essential element of saving as all of these devices and machines are now daily reducing manufacturing costs in most of our American industries, and most of them will soon be in service at terminal and transfer points handling ocean and river cargoes as well as freight.

The handling of l. c. l. interchange at Cincinnati is as follows: bearing in mind that at the present time the railroads are not making any attempt at store door delivery, although this also is undoubtedly going to be the outgrowth of the use of this system. At Cincinnati only railroad freight is being handled. The cars are spotted alongside the freight station in the usual manner. Doors are opened and hand trucks or electric trucks receive the goods in the usual manner. They are then conveyed to the uniform containers and packed into the container identically as you pack a freight car.

These containers are placed in rows in the freight station. each container being plainly marked for one of the seven railroads entering Cincinnati. The ocntainers are wood and steel boxes, 17½ feet long, 8 feet wide, 7 feet high, and are usually loaded not to exceed four tons. The containers each have wide side doors and wide end doors so they may be easily loaded with miscellaneous freight of all kinds. Also each container (at least most of them) is fitted with large substantial casters so that it may be rolled across the station floor or rolled along the platform alongside a car. When the container is filled or loaded it is lifted by a traveling electric crane, swung from its position and transported by the crane to the point where a motor truck chassis stands ready to receive the container as the complete body of the motor truck. Clamps are set and tightened, and the motor truck dashes

off to the station of the railroad over which the goods in that particular container are routed.

At some stations the traveling crane delivers the container to the motor truck sidewise and at others the delivery to the chassis is endwise. In most cases where endwise delivery is made, and in cases where crane operation is not necessary on acocunt of the few containers per day to be handled, the containers are set on a type of skid, which is just high enough and wide between its supports to permit the truck chassis to be backed underneath the container, and the lifting and lowering is then done through the use of electrically driven chain hoists. Where this latter method is in use, the skids are in bays extending into the station shed.

When the truck reaches the destined station, the traveling crane immediately relieves the chassis of the container and then places a return container on the chassis, effecting a minimum of delay for the motor truck. A central despatcher handles the operation of all of the motor trucks, insuring their operation for a maximum percentage of the day.

The electric traveling came of course carries the container with its load to the point nearest the spotted car of the connecting line and it is unloaded direct from the container into the car of the connecting line; or, if the goods in the container are for various small stations along the line, they are placed in proper cars in the usual manner, remaining in the container until cars are spotted for that particular freight division on which the station is located. It is entirely practicable to haul the containers about by means of a winch or an electric tractor truck although they are not yet equipped for movement by electric tractor.

Of course, it is but a step from the development of this system into an electrically operated unit for the complete system of freight service, including delivery and receipt of freight from store door, which will be a very simple step ahead—involving merely the use of the same type of trucks and ocntainers for the door to door service as is now employed in the inter-railroad service. It is almost necessary for similar plans to be put into use throughout the country in order to meet the demands of the economic situation of costs, manual service need and equipment shortage.

Because of this engineers and railroad operatives are making exhaustive studies of these different machines and their co-ordination into handling systems. With its adoption will also ocme a fuller appreciation by the railroads of the value of all types of mechanical handling machinery. In our manufatcuring plants, men are given the benefit of every conceivable type of machine or device which will save physical effort and conserve time and energy, of speed up production, but little use has been made of these electrically operated machines in freight and ocean cargo handling.

An automobile plant is equipped with numerous systems of conveyors, cranes, etc., all electrically operated. And in all large plants coal is handled by crane, belt ocnveyor or trolley with grab bucket, oftentimes without manual labor service from coal car to furnace grate bars, and even the ashes are automechanically carried to refuse piles.

Endless instances of the use of mechanical handling machines could be given, where savings have resulted sufficient to pay for equipment in one or two months after installation; and it is logical to believe that the very first moves on the part of the actual owners of the railroads after January 1, will be to purchase and install electric auto-mechanical handling machinery of many kinds.

Electric Trucks and Tractors

The Elwell-Parker Electric Co.

By Frederick B. Fink

With the present labor shortage, high wages and shorter hours it becomes necessary for railroad officials to investigate ways and means for handling freight, baggage, materials in their shops, etc., at a less cost and in shorter time than is accomplished at present by the manual labor method. Man power is not entirely done away with by the adoption of electric trucks and tractors, but their usage will displace from six to ten men for each machine installed, depending upon conditions, and the services of those men can be employed in more profitable ways.

The use of electric trucks and tractors not only means a great saving in dollars and quicker service, but it makes the lot of the operator a more contented one. Thomas A. Edison has said, "It is my belief that the world's most immediate scientific need is inventions which will lighten the grinding toil of labor." The more machines brought forth to become identified with industry which can prove themselves labor saving, the more they will be the cause of enlarging the forces of employed labor, notwithstanding the belief by some classes of labor that these men-displaying units cause them to lose employment. This belief is wrong, as the men are placed in other classes of work. For example the automobile displaced many men, but it has given employment to hundreds of thousands of chauffeurs, a million men and women in automobile factories, branches, offices, service stations, and parts and accessory manufacturers.

The electric truck, and tractor, are offered as labor saving machines and also as assistants to the remedy for the shortage of labor, but principally as a means of saving money on the cost per ton of material handled, and this is accomplished by means of their displacing men and handling more material in a shorter space of time. For the purpose of more clearly analyzing the handling of material in railroad service, it would be best to divide the subject into four sections, viz., piers, transfers, depots, shops and storehouses.

Piers

In the handling of freight on piers, the first object is to do so as cheaply as possible; the second is to handle the freight quickly, keeping the bulkhead clear for outbound freight and the inbound freight moved rapidly to the piles on the piers, ready for consignees trucks.

Freight congestion at piers and freight terminals is caused by cramped quarters and lack of proper schedules. Old fashioned methods, hand trucks of the two wheel type such as now used, were in use when the pyramids were built, as any one interested sufficiently can see for himself by visiting the Metropolitan Museum of Art. A pier is not elastic and where a pier is handling from 5 to 10 times the freight it was designed to handle, it is not surprising that congestion should occur resulting in confusion and extensive delays. It is all very well to talk about longer piers and larger terminals, but these in many cases are physical, if not financial, impossibilities. We must work with what floor areas we have at present and by bringing efficient methods to bear upon the handling of merchandise, endeavor to relieve the pressure until such time as improved conditions are possible.

To do this properly, if the pier is of sufficient length to warrant the use of tractors, then tractors and trailers are advised. The height of the trailer should be governed by the height of the average tailboard from the floor of the bulkhead, on outbound freight, so that the freight may be placed directly on the trailer, pushed onto the scales and weighed. It is then ready to be made into a train for the tractor to pick up and pull onto the car float, where each trailer is dropped at the car door, to be pulled into the car, or pushed in by tractor if very heavy material such as machinery, etc., is on the trailer.

Objections to this method of unloading from tail board to trailers have been put forth because of the inability of the receiving clerk to give the exact weights to the different classifications, which he has to estimate if the consignor has failed to put the weight on the bill of lading. This, of course, applies only to mixed classifications on the same

trailer and does not apply to solid loads made up of one classification.

To offset these objections some of the railroad, companies unload to the platform of the bulkhead, where the freight is hand trucked to the scale and there hand trucked a few feet to waiting trailers on a level with the platform. Each trailer stands at a place bearing the corresponding number of the car, and when fully loaded the tractor picks it up and trails it to the car where the freight properly belongs and the verichecks are given either to the tractor operator or to the coupler of the trailers, who rides with the train.

Objections to the latter method have been raised, in that it causes an additional handling of the freight, thereby increasing the cost per ton for handling, but the users of this method claim accuracy for it, while with the tailboard to trailer method too much estimating has to be done.

Adherents of the tailboard to trailer method claim there is but little estimating to be done, but its greatest value is that by this method the bulkhead is kept clear, allowing the delivering street trucks to unload and get away quicker because the platform of the bulkhead is not congested. It is a noticeable fact that on those piers where hand trucks are still used the platforms are congested all day and at about 4 o'clock in the afternoon the freight is piled half way to the ceiling, while on the piers where electric trucks and tractors are used the freight is moved away as fast as it is unloaded and at 4 o'clock the platform is as clear as it has been at any hour during the day.

As a further indication of the saving to be effected by the use of electric trucks and tractors, at one pier on the Hudson river where the tonnage handled per day is comparatively small, an electric truck with platform, known as a "load carrying truck" to differentiate from a tractor, was placed to try out its possibilities for pier work. It was found however that the truck was not the proper unit, as the time consumed in loading and unloading was too great to warrant the investment. It was then decided to try it out using the truck as a tractor and five trailers were put in service with it. This is about one-tenth the proper number of trailers to a tractor and is mentioned here to indicate the handicap of the test. Notwithstanding the handicap and the unfamiliarity of the force with tractor and trailer operation, 119 tons were handled at a cost of .264 cents per ton.

To have moved this same tonnage by hand trucks, would have cost .56 cents per ton, showing a saving by the use of the tractor of .296 cents per ton. In spite of the handicap mentioned above the operation kept two doors of the bulkhead clear. We furthermore found in the experiment that when using hand trucks, the driver of the street vehicle would place the boxes or packages on the tailboard of his vehicle and wait for the freight handlers to unload it on to the platform, while there was no hesitancy on his part to place the boxes or packages on the trailer himself when it was backed up to the tailboard, thereby freeing at least one freight handler for other work.

Transfers

Here also seems to be a division of opinion, as to whether the tractor and trailer system or the load carrying low platform electric truck, is the most efficient and economical. Both systems of handling have their adherents, but with either method as compared to the use of hand trucks the handling is done quicker and with considerable saving in money. From figures received from transfers where load carrying trucks are used the conclusion can only be arrived at that while the initial investment is greater than that for tractors and trailers, the cost per ton is less.

To illustrate this, one of the large transfers using a number of load-carrying trucks, handles about 1200 tons per day at a total cost per ton, including everything chargeable to the operation, of 61 cents per ton, and this with trucks that are now about nine years old with the higher cost of maintenance due to their age. In this operation, manual labor is reduced to a minimum as the loaded truck runs into and to the end of the car where its load is removed from the low platform by hand, and vice versa when loading. In another large transfer, where only tractors and trailers are used, and where about 1200 tons average per day are handled, it is interesting to note that on November 7, 1918, 19 gangs of 5 men each with two-wheel hand trucks; 14 tractor gangs of 3 to a gang; 14 floaters and 41 packers, or 192 employees in all were thought necessary to handle 1352 tons of miscellaneous freight, at a cost of .955 cents per ton. By proper supervision and rearrangement of the handling it was found that, after the wrinkles had been ironed out, 1221 tons could be handled by 4 gangs of 5 men each with two-wheel hand trucks; 11 tractor gangs of 3 men each; 13 floaters and 39 packers, or a total of 105 employees at a cost of .769 cents per ton, or a saving of .186 cents per ton over the cost without proper supervision.

It will be seen therefore that in two transfers handling about the same class of freight and about the same tonnage per day, a difference of .159 cents per ton is shown in favor of the load carrying truck over the tractor and trailer system. Handling 1200 tons per day, would amount to $190 per day or $57,000 per year, thereby proving the contention that the difference in initial cost is soon made up. Further, in the use of the tractor and trailer method, the tractor drops the loaded trailer at the car door, when it becomes necessary for man power to be used to push the trailer into the car and possibly to the end of the car over floors that often are none too smooth and very often wet, and when unloaded has to be used to push the trailer out onto the platform for the tractor to pick up. By the use of the man power, in this operation the tractor becomes only partly a labor saving unit, which is wrong when units better adapted to the service are available.

However, in small transfer stations tractors are being used with good results, two of these small transfers reporting that in the handling of 300 tons each per day, each with one tractor, one transfer having 16 trailers and the second having 40 trailers—both tractors working under adverse conditions, as to crossovers, platforms, etc.,—the first showed a saving of six cents per ton, due to the small number of trailers used and the second a saving of 10 cents per ton. Both are showing a saving, but in addition, the receiving platforms are kept clear, something unknown before, and the entire operation is speeded up.

The belief that any one type of electrical truck or tractor is the proper unit is erroneous and there is an inclination toward the use of electric elevating platform truck for transfer work, as by its use castered platforms may be picked up with their load and deposited in the car at the point of stowage, the truck picking up an unloaded platform and returning it for a load, depositing it and immediately picking up a loaded platform which the laborers have loaded while the truck was in transit with its previous load. By this method the pushing of trailers into and out of cars is eliminated, as in the tractor and trailer system, and the objection to the load carrying truck without the elevating platform of having the truck tied up so long for loading and unloading has been overcome.

Another type of electric truck which is a valuable adjunct on piers, in transfers and shops, is the crane truck of 2000 lb. capacity, used for handling heavy pieces of machinery and other heavy materials and in the case of piers or transfers, lifting that machinery or other heavy material onto the load carrying trucks or onto trailers, as the case may be, thereby saving a great amount of labor and time.

The sight of electric trucks hauling baggage and mail in passenger terminals is a common one, but its importance can scarcely be enlarged upon, as while it is an established fact

that the savings shown by these trucks are from 58 to 80 per cent over the old method of pulling the trucks by hand, there are some items which must be taken into consideration and on which it is impossible to place a value in dollars and cents; those are the relief to terminal congestion and the prompt despatch of trains resulting from avoidance of baggage detention. This also applies to express and mail haulage.

Shops and Storehouses

The electric truck, particularly the elevating platform type and the crane truck, or a combination of the two types, are of such value in the shops and storehouses that the saving is almost unbelievable, as the records submitted on 51 electric trucks in 14 shops show a saving in labor as high as 89 per cent, and that without the later types of trucks designed for use in shops and storehouses.

Records show that with the installation of one truck in the shops on one of the large eastern railroads, four men were displaced who were receiving 39 cents per hour which equals $3,744 per year. On the same railroad, in the shops located in another city, three trucks were installed, which displaced 11 men, who were receiving 42 cents an hour, or $11,088 per year.

In the shop of another well known eastern road, an electric truck was installed for handling car seats to and from the upholstery department to the cars. This truck showed a saving of $3,024 a year, and that at the time when the labor the truck displaced was receiving but 24 cents per hour.

The shops of still another road in the east have in service four load-carrying trucks and one tractor and these have displaced 25 men with hand trucks, 8 horses or mules with drivers and the services of a switch engine for 2 hours a day; they show a saving over the former method of handling of $34,363 per year.

The electric crane truck of 2000 lb. capacity will be found to be a valuable unit in shops for the handling of pumps to and from the locomotive, as well as in the handling of heavy castings, etc., picking the material up, placing it on the platform of the truck, carrying it to its destination quickly and depositing it where wanted, saving a great deal of time and labor.

Electric Welding

By H. A. Currie

Assistant Electrical Engineer, New York Central

During the past three years numerous articles have been written describing the progress in the art of electric welding, covering the relative merits of machines, electrodes, methods of welding, current values and so forth. These show the ever-increasing interest in the subject.

The keen interest displayed by the Emergency Fleet Corporation was reflected in the appointment of the well known welding committee composed of representatives of shipping men, engineers, the government, colleges and railroads. The wide publicity given the work of this committee has had much to do with the great interest taken by manufacturers, builders and railroads.

This paper will be devoted to a brief resume of the welding facilities and general character of work done in the motive power shops of the New York Central. One phase of welding that has had but little attention paid to it is the fundamentally important one of preparation. This will be emphasized in the present paper. Railroad shops are are perhaps the largest users of arc welding machinery for repair purposes.

The facilities in New York Central shops consist both of D. C. and A. C. units of various makes. Depending on local requirements they are either portable or in a fixed location. Satisfactory results have been obtained from both types of equipment.

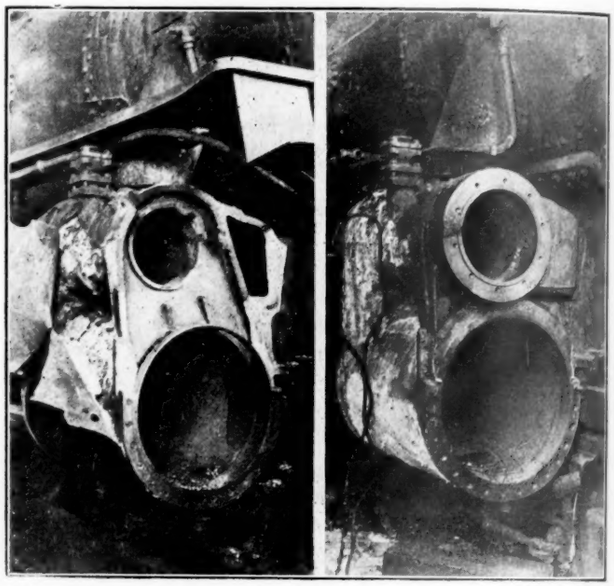
The welding facilities consist of the single operator type of machine suitably located throughout the buildings and so connected by bus lines that machines can be electrically connected to any outlet throughout the shops. This arrangement gives all the advantages of multiple operator machines with none of the disadvantages.

The saving in our locomotive shop since electric welding was installed can hardly be calculated and the additional mileage that is obtained from locomotives is remarkable. This is mainly due to the following:

A. Greater permanency of repairs.

B. Shorter periods in the shop, giving additional use of equipment.

C. Existing shop facilities permit taking care of a larger number of locomotives than originally expected. Shop congestion relieved.



Example of Locomotive Cylinder Repair Work Done by Electric Arc Welding.

D. The use of worn and broken parts which without electric welding would be thrown in the scrap pile.

E. The time required to make repairs is much less and requires fewer men.

F. A smaller quantity of spare parts carried in stock.

The following is a brief description of some of the work done on steam locomotives:

Flue and Fire Box Welding

The most important results are obtained by welding the boiler tubes to the back flue sheet. The average mileage between shopping an account of leaky flues on passenger locomotives was 100,000 miles. This has been raised to 200,000 miles with individual records of 275,000 miles. For freight this average has been raised from 45,000 to 100,000 miles. At the time of locomotive shortage this effect was of inestimable value.

Good results have been obtained without the use of sand blast to prepare the tubes and sheets. The engine is either fired or an acetylene torch used to burn off the oil, after which the metal is cleaned off with a scraping tool. The ferrules are of course well seated and the tubes rolled back. The boiler is filled with water in order to cool the tubes, which having a much thinner cross section than the sheets, would overheat sufficiently to spoil the weld or burn the tube.

The metal is then laid on, beginning at the bottom of the bead and working to the top. Records show that the time to weld a Pacific type locomotive boiler complete is 12 hours.

A variety of repair work is readily accomplished in locomotive fireboxes such as the welding of crown sheet patches, side sheet cracks and the reinforcing and patching of mud rings. Smokebox studs are also welded on.

Side Frames, Couplers and Wheels

Cracked main members of side frames are restored and wearing parts built up and reinforced. Because of accessibility no special difficulties are encountered in this work. Formerly this work was chiefly done with oil welding and some acetylene and thermit work, but it was very much more expensive as the preparation required considerable effort and took a good deal of time.

Fifty per cent of the engines passing through the shops have worn and broken coupler parts and pockets. By welding an average saving of about $15 per coupler is made. It costs about $30 in material and labor to replace a coupler and only $4 to repair the average broken coupler. The scrap value is about $5.

Great success has resulted from various repairs to steel wheels and tires. Flat spots have been built up without removing the wheels from the locomotives, thus effecting a great saving in time and money. Building up sharp flanges saves about 5/8 inch cut off the tread, which when followed through means about $30 for a pair of wheels, a great increase in tire life and reduction. in shop costs.

Cylinders

The most interesting feature developed by arc welding was the accomplishment of cast iron welding. The difficulty in welding cast iron was that while the hot metal would weld into the casting, on cooling the strain would tear the welded portion away from the rest of the casting. Small studding was tried out with no success. Not until wrought iron studs, proportioned to the sectional strength of the casting, were used did any satisfactory welds turn out. Studding of this large size was looked upon with distrust as it was thought that the only weld was to the studding. This naturally meant that the original structure was considerably weakened due to the drilling. This, however, was not the case. The large studding was rigid enough to hold against the cooling strains and prevented the welds in the casting from pulling loose, thus adding the strength of all the welded portion to that of the studs. In most cases where external clearance will permit, sufficient reinforcing can be added to more than compensate for the metal removed in drilling for the studs.

Perhaps more skill is required for this class of welding, but with a properly prepared casting success is certain. A concrete case of the economy effected in welding a badly damaged cylinder on a Pacific type engine is as follows:

WELDED JOB.	
Cost of welding broken cylinder, labor and material	$125.00
Length of time out of service, 5 days at $20 a day	100.00
Scrap value of old cylinder (8,440 lb. at 2.09 lb.)	177.00
Total	$402.00
REPLACED CYLINDER	
Cost of new cylinder ready for locomotive	$1,000.00
Labor charge to replace it	150.00
Locomotive out of service 18 days at $20 a day	360.00
	$1,510.00
Less cost of welding	402.00
Total saving	$1,108.00

Some 25 locomotives have been repaired in this way at one shop alone.

Many axles are being reclaimed by building up the worn parts. These are tender and truck axles which are worn on the journals, wheel fits and collars. The saving is about $25 per tender axle and $20 for truck axles.

The range of parts that may be repaired or brought back to standard size by welding is continually expanding. Wearing surfaces on all motion links and other motion work, crosshead guides, piston rod crosshead fits, valves and valve seats, air, steam, sand and other pipes, keyes, pins and journal boxes have all been successfully welded.

A large saving is effected in welding broken parts of shop tools and machinery. During the war this was of untold value, as in some cases it was out of the question to get the broken part replaced.

Training of Operators

This is the most important feature of arc welding. Success depends solely on the men doing the work. They must be instructed in the use of the arc, the type, size and composition of the electrode for various classes of work and the characteristics of the various machines they will be called upon to use. A properly equipped school for teaching these matters would be a valuable adjunct for every railroad. Manufacturers of equipment have recognized the importance of proper instruction and have equipped schools where men are taught free of charge.

Supervision

Co-ordinate with the actual welding is intelligent supervision. The scope of the supervisors should include preparation of the job for the welder and general oversight of the equipment in the shop.

Thus the duties of the inspector might be summarized in the following points:

1. To see that the work is properly prepared for the operator.
2. The machines and wiring are kept in good condition.
3. Proper electrodes are used.
4. To inspect the welds in process of application, and when finished.
5. To act as advisor and medium of interchange of welding practices from one shop to another.

In work such as flue welding and industrial processes which repeat the same operation, piece work rates may be fixed. For varying repair jobs this method cannot be used with justice either to the operator or the job.

Bare electrodes are used almost exclusively, even for A. C. welds. Whenever a new lot of electrodes is received it is good practice to make up test piece samples and subject them to careful tests and analysis.

The sizes of electrodes and uses to which they are put are shown in the table.

Size	Type of Work
1/8 -in.	Flue welding.
5/32-in.	For all repair work, broken frames, cylinders, etc.
7/32-in.	For building up wearing surfaces.

General Rules

In closing it will be well to point out a few general rules required to obtain satisfactory welds.

1. The work must be arranged or chipped so that the electrode may be held approximately perpendicular to the plane of welding. When this cannot be accomplished the electrode must be bent so that the arc will be drawn from the point and not the side of the electrode. For cast iron the studding must be properly arranged and proportioned. The surfaces to be welded must be thoroughly clean and free from grease and grit.
2. The proper electrode and current value must be selected for the work to be done.
3. The arc should be maintained as constant as possible.
4. For nearly all work the prepared surface should be evenly welded over and then the new surfaces welded together.

5. Suitable shields or helmets must be used with proper color values for the lenses.

For locomotive work a good operator will deposit an average of 1 and 1½ lb. of electrode per hour. The limits are from 1 to 2 lb. High current values give more ductile welds, in proportion to deposited metal. For locomotive welding the great advantage of the arc over thermit, oil or acetylene welding is that preparation at the weld is all that is necessary. No secondary preparation for expansion of the members is necessary. This is the great advantage in welding side frames.

German Ships

A fine tribute was paid to railroad work when a committee consisting of railroad men was appointed by Capt. E. P. Jessop, U. S. Navy, to report on the feasibility of making repairs by electric welding to the damaged German ships. This committee, headed by D. H. Wilson, after careful examination reported that it was practicable to weld the damaged parts, as similar cast iron welding work was daily done in railroad shops. Machines and operators borrowed from the railroads were responsible for the speedy and thorough repairs to these ships.

By being able to weld the damaged parts without removing them, the ships were released for transport service in three or four months instead of a year or more, as the Germans anticipated.

The Secretary of the Navy, in his report on the repairs to the German ships, has stated "that the repairs to these ships resulted in a saving of 12 months in time, enabling us to transport at least 500,000 troops to France and effected an economy which is conservatively estimated at upwards of $20,000,000. He further states that there was not a single instance of a defective weld, nor has one developed during the months of arduous service in which these ships have been engaged."

When it is considered that these repairs released a tonnage of nearly 290,000 tons, it will be realized what an important part electric welding played during the war.

Electric Car Lighting

By A. G. Oehler

Associate Editor, *Railway Age*

It is generally conceded that the railroads are in need of much new passenger car equipment. This, of course, includes car lighting equipment, and those interested in car lighting are asking what the equipment will consist of and how much is needed.

At one time cars were lighted with candles. Candles were superseded by oil lamps, and oil lamps in turn were largely displaced by gas light. Now, if present day practice is continued, gas will in time become little more than a memory.

Types of Equipment in Use

Electric train lighting can be divided into three general classes, *i. e.*, head end, straight storage and axle systems. Head end systems usually consist of a steam turbo-generator set located in the baggage car, supplied with steam from the locomotive, working in conjunction with two or more storage batteries placed on the coaches. Where head end systems are used in conjunction with electric locomotives, a motor-generator set on the locomotive supplies the power for train lighting. For short suburban trains, some consideration is being shown to the use of a turbo-generator set located on the locomotive. The cars for this service are equipped with train lines, but without batteries. There is also a head-end axle system in which a large axle generator in the baggage car supplies power for lighting all the cars in the train. Straight storage lighting is still in use to a considerable extent, but is being rapidly displaced by axle lighting.

There is still a large percentage of gas lighted cars in use in the United States, but the general tendency is to adopt the 32-volt axle generator systems.

There are six different types of axle lighting systems manufactured in the United States, each of which has its merits. Practically all of this equipment which is in service, is belt driven and generators are either truck-mounted or body-hung. There are two general types of batteries, namely, the lead-acid and the nickel-iron. There is but one make of nickel-iron battery, but several of the lead-acid type.

Maintenance

The two biggest maintenance costs are, first, batteries and second, belts. Battery maintenance is kept at a minimum by keeping battery compartments and containers clean and painted, by proper flushing and particularly in the case of the lead cells, by avoiding excessive overcharge and complete or nearly complete discharge. It is also essential that the battery box be dust tight, that vent plugs be kept in place, connectors carefully maintained and regular inspection made for leaky tanks and general repairs.

There are different kinds of current control for maintaining proper charge in the batteries. In this connection it is of interest to mention the fact that modern practice indicates that the cutting in speed of the automatic switch is of much less importance than the minimum full load speed of the generator. The size of the generator and of the battery is governed by the kind of car and the class of service in which the car is to be used. Recommendations have been made by the Association of Railway Electrical Engineers regarding a standard method for rating generators, material for armature shafts, bearings, grease retainers, etc., which will be of considerable interest to the prospective purchaser. These recommendations will appear in its 1919 proceedings.

The factors of first importance in applying belts, whether for truck-mounted or body-hung generators, are that the pulleys must be in line, that the belt will clear the end sill and brake rigging by at least three inches and that the pulleys run true. This last consideration has been deemed of sufficient importance by the Master Car Builders' Association to warrant the adoption, as recommended practice, of the use of rough turned axles for mounting axle pulleys. Careless switching in the yards is a common cause of belt trouble. Belts may be snapped off in the yards in this way, or so strained that they are lost when the generator load is applied.

Two gear-driven machines have recently appeared in the field which may prove to have considerable merit. Other types of gear and direct drive have been tried out in the past and discarded because of inherent faults such as difficulty of applying and removing the equipment and the high first cost. Much progress has been made, however, in the last few years in the use of gears in general and should a special axle be considered essential for belt operation, there would be several added arguments in favor of a gear drive.

Lighting Fixtures

The selection and placing of lighting fixtures in the cars has become a problem in illuminating engineering, and, following modern lighting practice, the tendency has been to provide general illumination with a few large units, placed along the center line of the car. Fixtures are designed and placed so as to give a certain number of foot candles illumination on the reading plane. Aside from light intensity are considered efficiency, uniformity, distribution, quality of illumination produced and artistic merit. For coach lighting and other classes of cars where efficiency is the primary object, the open-mounted reflector is the one most universally used, and where appearance is the primary consideration,

enclosing units are usually applied and efficiency somewhat sacrificed.

Special lighting is required for certain cars and consists of berth lamps, reading lamps for parlor cars and composite or club cars, and special novelties for table lighting in diners. Aisle night lights for sleepers are probably the most recent development in car lighting. They are placed under alternate seat ends and consist of a fixture fitted with a ten-watt straight side bulb which throws light onto the aisle carpet through a green glass. They tend considerably to enhance the value of the upper berths. For postal cars, the specifications of the Standard Car Committee of the Post Office Department must be met. Aluminum or aluminized metal reflectors are in very general use in postal and baggage cars, due to their high efficiency and durability.

Lamps

Both the type B and type C tungsten lamps are used, the type B supplying the need for units of 50 watts and less, and it appears that the type C lamps will be used to fill the requirements for 75 and 100 watt units. The type B lamps are made both as round and straight sided lamps. Based on 1918 records, the sales of straight sided lamps exceeded those for round bulb lamps. This is probably due to the lower cost of the straight sided lamp, particularly in the larger sizes.

Train Lines

The time is too short to say more about car wiring than to mention the fact that the practice of equipping cars with train lines is generally recommended. It has been practically demonstrated that good train lighting service may be had without them, but it is apparent that facilities for train line connections will greatly reduce the possibility of light failures. They are particularly desirable for the protection of mail cars.

Amount of Equipment Needed

I have stated that the railroads were in need of passenger cars and have endeavored to outline the fundamental considerations which enter into the purchase of car lighting equipment. Perhaps you would be interested in an estimate of how much the railroads are short.

Between the years 1910 and 1916, the number of passenger cars in service increased from 47,095 to 54,774 or 16 per cent. Meantime, the increase in amount of travel was 36 per cent. In 1917 the increase in the number of passenger cars in service was 1,167. Government control was established at the beginning of 1918 and during that year only 131 cars were ordered for all the railroads. This year no substantial orders for passenger cars have been placed and owing to retirement of cars, there may have been some decrease.

Passenger traffic in the meantime has increased. As already stated, the increase in travel from 1910 to 1916 was 36 per cent. In 1917 alone, it was 14½ per cent. In 1918 the increase over 1917 was 8 per cent. In the first eight months of 1919, the passenger business handled was 6.3 per cent greater than that handled in the same months of 1918. These cumulative increases since 1916 aggregate 32 per cent.

The large increase in passenger traffic in 1917 and 1918 has been attributed chiefly to the movement of troops and to the traveling of their relatives and friends to and from the cantonments where they were located. Since 1918, however, there has been a very large reduction in the movement of troops, and yet the statistics of the Railroad Administration show that the amount of travel in July, 1919, was 12½ per cent greater than in July, 1918.

There is no apparent reason for doubting that the present large amount of travel will continue, and even increase. In addition to this, the railroads have had to postpone their steel car program and, of course, in the past the replacement of wooden by steel passenger equipment has been a very important factor. If the railroads during the last three years had bought only as many passenger cars per year as they did in the preceding six years, they would have bought in this three years at least 7,000 more cars than they actually did. But the increase in passenger business in the last three years has been almost as great as in all of the preceding six years together. Taking into consideration both the very small number of passenger cars that has been bought during the last three years and the enormous increase in passenger business which has occurred, it is safe to say that the railways after they are returned to private operation would have to have at least 8,000 and probably 10,000 more passenger cars than they actually will have in order to handle their passenger business in the same way that they handled it in 1916.

The largest number of cars ever built in one year in the United States and Canada was only 4,412, so it is apparent that conditions can not be entirely corrected at once, but I hope that consideration of these figures may aid the car lighting men in anticipating the size of the job they have ahead of them.

A. R. E. A. Rail Studies

BULLETIN NO. 218 of the American Railway Engineering Association which has just been issued contains the annual compilation of statistics of failed rails and the results of a number of individual and committee investigations of different phases of the rail problem. The rail failure statistics, which have been compiled by M. H. Wickhorst, engineer of tests for the rail committee, include the failures reported by the railroads of the United States and Canada for the year ending October 31, 1918, and cover rails rolled for 1913 and succeeding years. The ages of the rollings in track average as follows for the years shown below:

1913	5 years	1916	2 years
1914	4 years	1917	1 year
1915	3 years	1918	several months

The tonnage covered by the statistics in the report are as follows:

Year rolled	Bessemer	Open-hearth	Total
1913	155,417	1,550,938	1,706,355
1914	59,918	1,060,763	1,120,681
1915	12,141	1,034,531	1,046,672
1916	42,399	1,191,628	1,234,027
1917	24,223	1,077,832	1,102,055
1918	12,967	470,768	483,735

It will be noted that rails of Bessemer steel have formed only a small part of the tonnage covered by the reports. The average weight of open-hearth rail reported for 1918 was 101.5 lb. per yard, while that of Bessemer rail was 87.4 lb. per yard, indicating that the open-hearth rail was placed in tracks demanding heavier service. In spite of this fact the Bessemer rail show a larger number of failures per 100 track miles as is indicated by the following table:

Year rolled	Years service	Failures per 100 track miles		Comparative failures	
		Open-hearth	Bessemer	Open-hearth	Bessemer
1913	5	90.3	107.7	100	119
1914	4	47.4	111.1	100	234
1915	3	33.8	62.7	100	186
1916	2	27.9	41.6	100	149

The most encouraging feature of the railroad situation as indicated by these reports is the steady decrease in the total number of failures per 100 track miles. The number of these failures per 100 track miles for five years' service, as

shown in the reports of the rail committee for 1913 to 1918 inclusive, is as follows:

	1913	1914	1915	1916	1917	1918
Bessemer	413.3	373.9	236.9	214.1	134.1	107.7
Open-hearth	370.5	198.5	154.0	161.9	102.7	90.3
Total	398.1	277.8	198.5	176.3	107.1	91.9

Study of Transverse Fissures on the Santa Fe

On December 10, 1917, a train on the Gulf Lines of the Atchison, Topeka & Santa Fe was derailed by a rail which broke into 16 pieces and showed 13 transverse fissures. This rail was of 90-lb. Santa Fe section. The 51 remaining rails of this heat were located, removed from track, and sent to Topeka, Kan., where they were subjected to extensive tests to detect further indications of fissures. The drop and etching tests indicated the presence of great numbers of cracks in the interior of the head of some of the rails, a few of which acted as nuclei for the growth of fissures in service. Chemical analyses showed rail steel of about the usual composition, fairly evenly distributed and that the rails with fissures were all about the same composition as the other rails. The physical properties of the rails were about normal in the different parts of the section, except that the rails with fissures were low in ductility in the head, both longitudinally and transversely.

Relation Between Length of Service and Transverse Fissures

W. C. Cushing, chief engineer maintenance, Pennsylvania Lines West of Pittsburgh, has prepared a monograph describing a set of rails which have given long service to determine whether these rails show any indication of transverse fissures.

The study started with the assumption that if stored up internal stresses in rails proceeding in combination from three principal components which affect them in service, namely: (1) cooling strains of fabrication; (2) cold-rolling strains from wheel loads; (3) direct stresses in the track, tell the whole story of the cause of "transverse fissures" then it might be reasonably expected that rails especially long in service would be not only likely to have that type of defect, but would be almost certain to have it, particularly if the elastic limit of the metal were very low, thus reducing the ration between it and the wheel load, six rails were selected as follows:

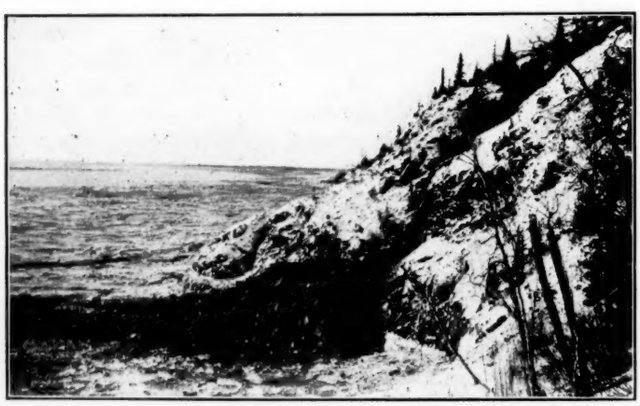
	Years
English rails (wrought iron), Louisville Division	41
German rails (iron and steel pile), Long Island R. R.	45
P. R. R., Bessemer, Pittsburgh Division	25
P. R. R., Bessemer, Columbus Division	22
A. S. C. E., Bessemer, Pittsburgh Division	10
P. R. R., Bessemer, Cincinnati Division	19

Nothwithstanding the high internal stresses, low elasticity and lack of homogeneity in the structure, a close examination failed to disclose any signs of transverse fissures. Mr. Cushing concluded that "it is reasonable to expect, therefore, that, if severity of service, especially by exceedingly heavy wheel loads, be the sole cause of the defect known as transverse fissure, these rails, after their unusually long service, and in some of the cases under the heaviest wheel loads in use, would be sure to be filled with transverse fissures. That such was proved by careful examination not to be the fact, that rails adjacent to and undergoing precisely the same conditions of service as those in which transverse fissures have been found to not have any, and that rails never put into service as well as those which have been in service, have been shown by Waring and Wickhorst to contain microscopical cracks, seems to prove beyond a doubt that the cause, the real cause of transverse fissures must be sought in the processes of manufacture. The wheel loads are the instruments of development from the initial defect, and it is true that the service has become uncommonly severe. The real office of a rail is to undergo service, and we will continue to seek a material which will fulfill the requirements of the service."

Intensity of Pressure on Rails

A sub-committee of the Rail committee which has been investigating the intensity of pressure due to wheel loads submitted a report based on a series of tests from which the following conclusion is taken:

The service experiment seems to indicate that with this section and composition of rail (100 lb. P. S. section, practically the same as the A. R. A., "B" section, of 0.666 carbon), the load of 25,000 lb. per car wheel should not be exceeded, but the committee is not prepared to accept this as a general conclusion. The intensity of pressure which a given spot on the head of a rail will stand is evidently influenced by the resistance of the metal surrounding that spot, a larger or differently shaped head may yield to a much less extent. Some of the New York Central experiments show that where the wheel and rail contour fit, the areas of contact with a given load are much increased and this by longer contact across the head. If but one wheel contour and but one rail contour existed and could be maintained, this would go far toward settling the question, but it must be remembered that with the existing diversity due to modifications of the original contour produced by service, this ideal condition is not likely to be reached. It is very certain that the practice of allowing wheel contours to depart widely from the original standard before renewal or returning is at the direct expense of severe punishment of any rail section that can be devised.



Scenes on the Government's Alaska Railroad. Left, Effect of Blast Near Mile 97. Right, Steel Gang at Mile 166

Convention of State and Federal Regulators

Walker D. Hines and Clyde B. Aitchison Address the Railway and Utilities Commissioners

THE OUTSTANDING FEATURES of the thirty-first annual convention of the National Association of Railway and Utilities Commissioners, held at the Claypool Hotel, Indianapolis, Ind., October 14 to 16 inclusive, were the addresses by Walker D. Hines, director general of railroads, Clyde B. Aitchison, chairman of the Interstate Commerce Commission, Charles E. Elmquist, president of the Association, and Max Thelen, director of the Division of Public Service of the United States Railroad Administration. In addition the numerous reports, especially the one of the committee on public ownership and operation, evoked widespread interest and called forth earnest discussion.

Representatives of state commissions of 24 states answered the roll call at the opening session of the convention, the total number of delegates being approximately 100. With the heads of the Railroad Administration, the Interstaee Commerce Commission and the Division of Public Service on the program it was but natural that the major portion of the convention's time was devoted to the discussion of problems relating to the regulation of common carriers by both state and federal bodies. In many of the addresses and reports relating to these subjects it was conceded by both federal and state regulating officials that state regulation of common carriers was essential. The conflict over the right of state and federal regulating bodies to prescribe rules for the transportation systems which had arisen during the period of federal control seemed to be satisfactorily adjusted.

A majority of those who spoke on the general subject of public ownership and operation of railroads, including those named above, declared themselves heartily in favor of a return to private operation with suitable federal legislation. The champion of the opposing side was Laurence B. Finn, chairman of the Kentucky Railroad Commission, who addressed the convention at his own request on the necessity for government ownership and operation of common carriers.

The convention was opened on October 14, by John W. McCardle, a member of the Indiana Public Service Commission, who delivered the address of welcome. In addition Governor Goodrich of Indiana welcomed the delegates to Indianapolis and outlined his views on the railway situation as follows:

Governor Goodrich Emphasizes Need for Increase in Rates

"I am of the opinion that the railroads should be returned to their owners at the very earliest possible moment. There is no good reason for delay, once Congress has provided a method of control and arranged to compensate them for equipment purchased by the federal administration and not necessary in peacetime operation, and for other losses incident to the government's seizing these properties.

"If present rates are not adequate, the director should immediately increase them, or in case of his failure to act, Congress should direct the advance of rates so as to fully cover the deficit in current operating revenues. This deficit should not be met out of the federal treasury.

"So long as the railroads are under government supervision, they should be freed from the operation of the Sherman and Clayton acts and encouraged to consolidate, but in such fashion as to preserve the great competitive systems which have developed in our country and which have made the American railroads, before the government took possession of them, such marvels of efficiency and economic operation.

"There is only one way to restore the old spirit of loyalty, the morale of the organization, and that is to restore the roads to their owners and permit the rebuilding of the human element, which is so vital to efficient and economical management. The longer the return is delayed, the more difficult the problem and the longer will it take again to restore our railroads to their former efficiency.

"I can see no good reason why the roads cannot be returned at once under adequate rates to permit them to go on, with the assurance that the government will fully compensate them for losses incurred by reason of government operation, and aid them in financing their obligations to the government and then work out the final plan afterward."

Clyde B. Aitchison on Railroad Problem

Clyde B. Aitchison, chairman of the Interstate Commerce Commission, who followed Governor Goodrich at the opening session of the convention concurred in the letter's views regarding the necessity for a return to private ownership and operation, and in addition outlined specific recommendations for the final solution of the railroad problem.

Mr. Aitchison said there must be a far greater degree of unification and utilization of facilities, terminals and equipment than ever before and that future railway construction should be limited to that which is necessary and convenient for governmental purposes and the public.

As a necessary means of preventing wasteful competition, he recommended a national regulating body, which would have power to prescribe the minimum rate as well as the maximum. This authority, he said, has long reposed in many of the state regulating tribunals, but has never been vested in the Interstate Commerce Commission. He also said a modification of the present plan of district traffic committees, under the direction of public authority, may be necessary during the readjustment stage that the carriers and the country may be spared the burden of anything approaching a rate war.

With the return of the properties and until the corporations have had an opportunity to make their own adjustments it seems reasonable, Mr. Aitchison said, that the government should stand behind unavoidable losses from operation on the ground that to a large extent the increased costs constitute a direct cost of war and should be borne as such.

Regarding the labor situation, the speaker declared that legislation must be provided for speedy and adequate means of enforcing the just demands of employees, but that the country is entitled to protection against the irretrievable damage which must follow if either party to the dispute insists upon being the final judge of the justice of its own cause and stops the wheels of commerce.

President Elmquist on Federal and State Regulation

Charles E. Elmquist, president of the association, in delivering the president's address at the opening session, reviewed the war-time activities of the state public service commissions, their relationship with the federal Railroad and Fuel Administrations, and cautioned the commissioners to give particular attention in the future to the tendency of the public in peace time to demand lower rates from public utilities, while the cost of materials and supplies are in-

creasing. In regard to the railroad problem Mr. Elmquist said in part:

"Advocates of government ownership, or the Plumb plan, and those who favor a continuation of government operation for the political advantage which might arise therefrom in the ensuing national campaign, naturally oppose the final consideration of railroad legislation during the special session. But adjournment without passing such legislation may throw the whole question into the national campaign, in which event remedial legislation may be indefinitely postponed.

"There should be no uncertainty upon this question. Delay seriously interferes with the readjustment of our business activities and strengthens the conviction of many persons that the time has come for this government to assume the permanent ownership and operation of the transportation lines, coal mines, packing plants, flour and lumber mills, coal and oil lands, steel plants, banks and many other important industries.

"We are accustomed to privately operated railroads, and the experience which has been gained during the two years of federal operation has not convinced the American people that private operation is a failure. We are convinced, however, that regulation must be rounded out so as to give the people more perfect control over the rates, service, standardization, operating costs, consolidations, and extensions of those arteries of commerce. No serious consideration should be given to the question of public ownership until it has been demonstrated by experience that private operation, subject to more perfect regulation, fails to produce satisfactory service at reasonable rates, or that the enforcement of statutory laws will prevent periodical financial mismanagement.

"Congress is about to kick the anti-trust law into the middle of the ocean and permit consolidations subject to the approval of public authorities. It is difficult to say whether sentiment for the consolidation of railroads is real or artificial, but it nevertheless exists. Every combination of railroads means an extension of monopoly and imposes upon Congress and the states the absolute duty of seeing to it that the arm of regulation shall secure for the people that adequate service which competition has in a large measure provided for them.

"Remarkable as it may seem, the railroads, bankers and securities holders unite in demanding government regulation of capital issues.

"Corporations have taken advantage of federal operation to standardize and unify rates, charges, practices and classifications. They have persistently advocated centralization of all rate-making power in the federal government. 'Regulation by forty-eight commissions' is held forth as a great menace, although most railroad systems operate through only a few states. Railroad emissaries fail to mention the good work done by state authorities, but any mistake or alleged radical action of a state commission or court is shouted from the housetops."

In concluding his address Mr. Elmquist presented his resignation as general solicitor of the National Association of Railway and Utilities Commissioners to take effect on December 1, 1919. Mr. Elmquist has held this position for the past two years, and in addition to the aid he has given in the carrying on of valuation work both by federal and state commissions he has served as representative of the state commissions in dealing with the Railroad Administration and has been instrumental in the elimination of difficulties which have arisen over the right of state and federal regulating bodies.

The principal addresses before the convention were delivered at the annual banquet held on the evening of October 15. The speakers were Director General Hines, who talked of the railroads under government control; Chairman Aitchison, of the Interstate Commerce Commission, who spoke of the transition from government to private control; Charles E. Elmquist, retiring president of the association, who spoke on state commissions, and Max Thelen, director of the Division of Public Service.

Director General Hines Reports on His Stewardship

Mr. Hines said in part:

"My experience in Washington has convinced me if I had not been convinced of it before that this country is too big a place to be run from Washington; I attach the very greatest importance to representation of the public through local agencies which are directly in touch with the people, so from the time I became director general I felt one of the important things to do was to endeavor to avail myself to the fullest possible extent of the assistance and support of the state utility commissions throughout the country. It is therefore gratifying to me at this time that I have this audience of the state utility and public service commissioners of the country, to whom I can render an account of my stewardship as director general of railroads.

The railroads of the country at the present time are handling a larger business than they handled last year, and the business they handled last year was larger than the business they had handled in preceding years. They are doing that at rates which represent a lower proportion of the value of the things transported than I believe has ever been true in the past. We know from experience that the price of nearly everything has gone up far more than the cost of its production has justified, but the price of transportation has gone up in less proportion than has the cost of producing it.

"It is hard to express adequately the scope of the work of the movement of troops. In the twenty months ending with August, 1919, there were seven billion passenger miles of service performed in the handling of troops in this country, and that was to a very large extent in addition to a practically normal passenger traffic.

Inadequacy of Equipment

"In spite of this enormous volume of traffic the freight traffic is larger now than it was at the same time last year and it was larger then than in preceding years, so we have a condition where we are unable to meet the demands for traffic. This has always been true in times of heavy volume of business, but there are some special and obvious reasons for the difficulty which now confronts the railroads in handling all the business which is being offered, and that is the inadequacy of facilities and especially of freight cars. The reason more facilities are not provided is that in the year or two preceding federal control of the railroads the normal addition to cars and other transportation facilities were not met, because prices were very high, labor was scarce, and financing on the part of the railroad companies was unusually difficult. When federal control began it therefore began with a railroad plant that was not as large as it ought to have been to handle the business. During the first year of federal control there was a severe limitation as to the amount of material that could be taken from other war purposes to use for providing additional railroad facilities. After the most careful study it was decided that the Railroad Administration could not hope to get material for more than a hundred thousand freight cars, and that was the number that was ordered, and even then we found it was so difficult to get the materials for these freight cars that very few of the cars could be constructed in the year 1918.

"When the year 1919 began we were confronted with a new difficulty in the way of adding to the facilities and that was that federal control naturally was approaching its end from the time the armistice was signed. The government was not in a position with the end of federal control in sight to provide new government funds to acquire additional facilities beyond what had already been provided. More than

that, the failure of the appropriation on the 4th of March last, which had been sought by the Railroad Administration to enable it to meet its obligations already incurred, postponed the construction of even the hundred thousand cars that had been ordered, because they could not be paid for, and the equipment companies naturally had to slow down on their production. The railroad companies were unwilling to furnish money for new equipment because of uncertainty as to their own future, so the result has been that the Railroad Administration during the year 1919 has not been in position to provide any additional facilities except those which were needed, as an emergency measure, unless the railroad companies were willing to furnish the money, and the result is that at the present time the Railroad Administration has been unable to order or obtain authority to order any cars in addition to the hundred thousand that were ordered last year. So that that inadequacy of facilities, which were inadequate before the federal control began, and which have become increasingly inadequate since that time, principally accounts for the fact that the facilities now are not sufficient to handle all of the enormous business which is offering to the railroads of the country. And yet, even with that, we are handling more business than we did last year, and then we handled more than we ever did before.

Facing a Grave Peril

"We are in a waiting and uncertain situation with reference to the provision of transportation facilities, and it is a matter of very grave concern to the country. I have no reason to believe that the business will not be heavy again next year, when the railroads will be back under private control and when they may find it difficult to pool their facilities and use them as fully as they can be and are used under a unified control. Now, if this period of uncertainty and waiting shall be prolonged for any considerable length of time the result is going to be that there can be no timely planning for facilities to handle next year's business. In my judgment, if the legislation cannot take definite shape during the month of December, so that the railroads will know where they stand, and can begin making their plans to get the additional facilities they will undoubtedly need to handle the business of next fall, the country will be most disastrously handicapped next fall in having its business moved, so I regard that as perhaps the most compelling reason why the legislation providing for the future of the railroads shall be pushed through with the greatest expedition, and shall be adopted not later than some time in December, because unless these plans can be entered upon by the first of the new year I do not see how they can be effectively brought to a realization in time to handle the heavy business of the latter part of next summer and the following fall. I say, I think this ought to be done in December, and that carries with it the implication of what the President has already announced—his intention to hand the railroads back to the owners on the thirty-first of December.

"Our handling of this larger freight business at the present time is being accomplished without some of the important aids which we had last year in dealing with this matter. One matter of very great importance last year was the zoning of coal, whereby we acquired a very much larger efficiency out of the coal equipment, because consumers were required to get their coal from nearby mines, and unnecessarily long hauls of coal were prevented. That naturally terminated with the war and the result has been that the old custom has again been resorted to, and the amount of car mileage now required to carry a given tonnage of coal in the country has been very greatly increased.

"Again, under the control of the Food Administration and with the patriotic zeal of the people we got a heavy car loading last year, which had never been realized before, and which admitted of the traffic being carried in fewer cars than before. We are doing what we can to accomplish heavy loading this fall, but we can hardly hope to get the result which could be and was accomplished under war conditions.

Moving the Grain Crop

"We are endeavoring as far as necessary by an emergency movement to provide whatever cars are required to transport grain to the capacity of the elevators. We are now making a study to find any elevator space that is not occupied, with a view to finding the cars and supplying them to haul grain until that space is filled and then to supply cars to whatever extent is necessary to keep the elevators filled. The extent to which the elevators can be relieved of grain will largely depend on the rapidity of the export movement, and that will depend on foreign buying, and on the ocean tonnage available, so that in the last analysis the speed with which the grain crop will move is likely to be controlled by export movement, and that in turn will be controlled by the foreign buying and by the ocean tonnage.

"There were a number of very complicated influences which had the result of bringing about an unusual proportion of bad order cars, in the early part of the summer. In June we gave instructions to overcome that difficulty. About the time those instructions got into effect we had the very serious and widespread strikes on the part of the shop men in the month of August, and that set back our program to a very serious extent, but beginning with about the middle of August we have rapidly overcome that position. We have diminished the number of bad order cars by about 45,000, and at the same time we have brought into service some of the new cars which we ordered last year, to the extent of about 40,000; so that the situation with respect to the number of cars available for service is rapidly improving, and yet the demands for services are apparently increasing more rapidly than the cars can be found for that service. All of which goes back to the condition that there are not enough cars in the country and that there will not be until we can get a definition of the situation on the basis to which the railroad companies can proceed to buy the additional equipment they need.

The Labor Situation

"You have heard a great deal, and should, about extreme cases of increases in pay to the railroad employees. In that, as in so many other things, it is the extreme cases that are dwelt upon, whereas in a matter of this sort we must look at the general situation. The general situation is that the average increases in rates of pay which have been made for railroad employees throughout the United States has been about 50 per cent over the rates of pay which were in effect in December, 1917. I have yet to learn of any important industry which has shown a more conservative average of increase in pay in the same time, in view of the war conditions which made increases in pay both proper and necessary, and while this increase in the rate of pay has been about 50 per cent, the increase in the earnings per individual has been less than that, because the number of hours the individual employee works is less than the number of hours he was working in December, 1917, under the war pressure then prevailing and under the longer hours which were then established.

"I am aware that it is the present habit to condemn labor unsparingly. I believe this is unjust. I believe most of the extreme positions which have been taken by labor have been the reaction from extreme and unjust positions which have been taken in the past by employers, and I believe, too, that a large part of the present manifestations on the part of labor are simply a part of the world-wide unrest that we see on every hand. I think it is unfortunate for us to drift into an attitude of settled antagonism to labor, because labor is a very important part of the community, and in the long

run we must find a proper modus vivendi whereby we can secure the proper co-operation with labor, and I believe, by patience and fairmindedness, as well as firmness, that that can be accomplished, and I think it is unfortunate and not in the public interest to develop a bitter hostility on account of these manifestations at present, which I regard as temporary and which are momentary growths of the unsettled conditions which have been the result of the war.

Examples of Improved Efficiency

"I believe there is the most earnest desire to find ways to improve the efficiency of railroad operation. And I want to give you a few illustrations, which are mere types of many things that have been done.

"At the outset of the Railroad Administration it was decided to make a careful check of the practices that obtained in the roundhouses, in the handling of locomotives, and the practices that obtained in handling locomotives in terminals. A most careful study was made of that subject and it was found that there was room for very considerable improvement, and the present indications are that we are saving from fifteen to twenty million dollars a year on account of improved methods of handling the locomotives in the roundhouses and at the terminals.

"Another matter that was taken up with great activity was the matter of fuel conservation, to get a better quality of fuel, to see that it was fired with more care, to see that greater efficiency was gotten out of it. The railroad officers and engineers, the firemen and trainmen, and the shopmen throughout the country were interested in that work. Conferences and discussions were held all over the country, and our present belief is that we are saving from twenty to thirty millions of dollars a year on account of the improvements that have been made in our conservation of locomotive fuel, without any reference to the conservation of fuel in stationary power plants.

"We undertook early in the Railroad Administration to adopt standard operating statistics, so as to bring out the various elements of railroad efficiency, and so that we could compare what was done on one railroad with what was done before, and what was done on one railroad with what was done on another railroad. The result is that these statistics, which had never before been developed for the railroads of the country, as a whole, have been so developed that many of the railroads now get information about their own operation which they did not have before, and all the railroads now have an opportunity to compare theirs with those of other railroads, which was before impossible.

"Another matter: In the spring I took up the proposition that the railroads were not in a position to supervise their expenditures for maintenance of way and structures, and expenditures for equipment, to the same extent and with the same success that they supervised their expenditures in the movement of trains. The regional directors took the matter up at my request, and each one held conferences with all his federal managers. They exchanged the minutes of their meetings, and the federal managers then held conferences with all their subordinates, and local committees were formed and there has been a study of ways and means to improve the efficiency of supervision in all maintenance matters, and that is where a very large part of the total operating expense is found. There has been a greater study of that phase of railroad administration than ever before in the history of the country, and there has been a reaching out to find new units of comparison, so that each officer can see whether his subordinates are using their labor and material to the best advantage, so that one operating division can be compared with another, and so that there may be more efficient supervision of the men themselves. And I believe that we are getting very important progress in that direction.

"The most progressive railroads had been doing things of this sort for years. We do claim that we did take advantage of a very broad opportunity that was given to us to develop a similar interest on the part of all railroads, and to develop a comparative interest as between different railroads.

"In addition to that we have been endeavoring to encourage the enlistment of the interest of the employees in these matters, because the employees see a great deal that can be improved upon, and we are trying to encourage a situation where they will feel encouraged to come forward with their suggestions and criticisms, and will feel that they will be welcome in doing so, instead of being criticised. My sincere judgment is that in all these matters that I have used for illustrations, as well as in a great many others, the things that have been done by the Railroad Administration, simply on account of the opportunity it had, and which the railroads themselves did not have before, are going to bear fruit in increasing measure for a long time to come.

Maintaining the Properties

"We have another branch to our work which is of supreme importance. We are charged with the task, representing the United States government, of settling with the railroad corporations, after two years of occupation of property worth, perhaps, sixteen to eighteen billions of dollars, or more, and with perhaps two hundred and twenty-five or two hundred and fifty thousand miles of railroad, with all sorts of incidental properties which have been included.

"We devised a standard form of contract which the railroad companies and the government entered into. Those contracts are necessarily complicated, because they deal with one of the most complicated of subject matters. The questions that arise under those contracts are bewildering in number, and in their complexity, and it will be a work of supreme importance, involving hundreds of millions, and even billions, of dollars of the government money in working out a proper and just final settlement.

"One of the most important phases of that subject is the question of the maintenance of the properties. The statute contemplates, and the standard contract provides, that the properties shall be turned back in the condition in which they were received. But the contract also provides that the government shall be deemed to have complied with the obligation if it shall have spent upon the properties the same amount that was spent on them during the test period of three years, for similar purposes, making due allowances for differences in prices of wages and use of the property. So that is one of our greatest problems, to maintain the properties up to what the contract contemplates, and to avoid over-maintenance. We have given that a great deal of study. We have had in many instances to cut down budgets that were proposed for railroad companies. On the other hand, it has been impossible, on account of the scarcity of materials which existed during the war, to obtain for all railroads all of the materials that they put on the properties during the test period.

"Broadly speaking, my judgment is that we will be able to show, at the end of this year, that in the aggregate we have spent on the property what the contract contemplates; that what we may be short in some respects has been made up in other respects. The general impression, which has been disseminated to a considerable extent, is that the railroads have been seriously under-maintained during federal control, is altogether erroneous, and the balance, one way or the other, will not be a large figure, considering the enormous amounts that are involved.

"Now, in addition to these problems, we have another one, and that is not a small one. That is the problem of effecting the transfer of these properties back to private control. That is a vastly more difficult problem than was that of the government in taking over these properties. I am particularly anxious that this transfer back to private control shall

be made without disturbing the public service, and without subjecting the traveler or the shipper to confusion or uncertainty as to how he shall conduct his business when the railroad companies resume control, which control will not be unified, and may not have the uniform practices which have prevailed during government control."

The reports made by the several committees to the association were all adopted, although in several instances they brought forth lengthy discussion. These reports are briefly as follows:

Valuation

The valuation committee of the association reported the status of valuation work in the United States during the past year and outlined briefly the work of the association's Bureau of Valuation in assisting the federal government in this work. The committee also recommended that, in view of the fact that many of the carriers will urge that the cost of reproduction new should be based upon the prices which have prevailed during the abnormal war period, all regulating commissions should begin now to give close attention to that question.

Railroad Rates in Inter-Mountain States

The special committee appointed to confer with the director general of railroads in reference to passenger rates on federal controlled railroads in the states of Arizona, Nevada and New Mexico with a view of having the rates in those states reduced from 4, 5 and 6 cents to the general basis of 3 cents per mile, reported the results of its conferences with William G. McAdoo and Walker D. Hines, and after outlining the financial result of this extra fare in Arizona, Nevada and New Mexico stated that the commission of the three states involved have decided to file a joint complaint before the Interstate Commerce Commission in the hope of obtaining a 3-cent per mile rate by attacking the interstate rates from and to those states. Immediately following the presentation of this report Commissioner F. A. Jones of the Arizona Corporation Commission introduced a motion that the convention go on record as opposing more than a 3-cent per mile passenger rate on any of the Class A railroads of the United States. A substitute motion was later presented by Mr. Jones, and when the attitude of the convention seemed to be fully against adoption of the motion it was withdrawn.

Special War Committee

The report of the special war committee dwelt largely on the action taken by its chairman and members on legislative questions in connection with the solution of the railroad problem. In addition the report outlined the efforts of this committee to adjust satisfactorily the status of state commissions as regulating bodies, and the recommendations made by the committee to the House and Senate committees investigating the railroad problem. The position taken by the committee was, in general, in opposition to any form of government ownership or operation of the railroads and in support of the Esch-Pomerene bill with amendments which would preserve the police powers of the state with respect to service, utilities, abandonment, extensions and rates, and also to the proper co-operation between state and federal authority. In addition, the committee recommended that the existing interstate and intra-state rates, fares, charges and classifications, be continued in force for a period not beyond July 1, 1921.

Railroad Service, Accommodations and Claims

"Inquiries made by your committee through the commissions of the various states," said the committee on the above subject, "disclose that owing to jurisdiction being limited largely to acting in an advisory capacity to officers of the federal Railroad Administration, state authorities have been unable to accomplish as much as might be hoped for with reference to an improvement surrounding railroad service and accommodations, and the handling of railroad claims during the past year.

"With respect to restoration of train service, particularly on branch lines, the attitude of railroad officials has been generally that the trains which were discontinued were those which were the least profitable, and in fact unprofitable, and that therefore these trains should not be restored. While these contentions as to unprofitableness are in many instances true, the convenience of the public has frequently been overlooked. The reasonable convenience of the public, to whom the carrier owes its first duty, should be the determining factor in such matters. Even though the passenger revenue derived from a particular train on a branch line may not indicate a profit, it will generally be found that the total revenues of all kinds received from traffic on the branch will amply justify the operation of passenger trains as a convenience of the public. The operation of passenger trains for the reasonable convenience of the public is a part of the price which the carrier should justly pay for the privilege of enjoying the generally profitable freight business of a branch line.

"With reference to the handling of package freight, there appears to be some conflict of opinion as to the results obtained by the 'Sailing Day' plan inaugurated by the Railroad Administration, and which was later curtailed to a large degree. In most instances where the plan proved a failure, it was probably due to inadequate freight house terminal and transfer facilities, which continue to be the biggest problem to contend with in the handling of package freight. Considerable objection is made against delays occasioned by holding package shipments until a minimum weight of 10,000 lb. has accumulated. However, in order to properly conserve equipment, it is doubtful if this practice should be discontinued.

"The establishment of more refrigerator car lines on way-freight runs, should be encouraged in every possible way. Commissions in the various states might properly co-operate with the state agricultural and marketing departments, with a view of having refrigerator car lines established, in order to get the excess overproduction of perishable food stuffs to populous centers.

"The closing of stations and the abandonment of unprofitable lines, both steam and electric, constitute a class of cases which appear to be steadily increasing before many commissions. The reported decisions indicate that all commissions grant the desired authority in such cases only with the greatest reluctance, and after showing is made of hopeless insolvency or long continued operation at a loss. A carrier should be permitted to forego its obligations to the public, only in cases of the most extreme urgency, and it is needless to say that the caution displayed by all commissions with respect to such cases, is to be highly commended.

"Claims for loss and damage, and overcharges, while apparently being handled more expeditiously on the part of some carriers, continue to be a constant source of annoyance and friction with others. Overcharge claims as in the past are occasioned largely through failure of agents and rate clerks t o properly revise billing. It appears a hopeless matter for agents at small stations to keep their tariff files in proper order, making it impossible to keep in touch with the current rates, even if the agent possesses sufficient knowledge to interpret a tariff. Some of the more progressive lines have a corps of tariff inspectors employed, whose duty it is to visit all stations frequently for inspection of the tariff file, and to instruct agents and rate clerks in the proper use of such tariffs. This work is to be commended in every way, as enabling employees to make correct quotations to the public, and eliminating many overchange claims.

"Complaints are made in some sections, of refusal of cer-

tain carriers to join with shippers in reparation claims, unless claimant can furnish proof of actual financial loss, the practice resulting in some instances in injustices to claimants.

"Complaint is also made that numerous carriers are going back in their records, over a period of several years, and digging up undercharges of all kinds, and presenting bills for collection. This entails in most instances a severe hardship on former consignees, who had no knowledge of the fact that their freight bills were incorrect, and who cannot now collect, in turn, by deducting from the invoice, or adding to the selling price of the merchandise involved. The enactment of statutes of limitation, fixing a reasonable time within which undercharge claims may be collected, would appear to be a proper matter for serious consideration on the part of legislative bodies.

"Public health officials and physicians of prominence have issued country-wide warnings of the danger of a recurrence of the influenza epidemic during the coming winter and spring. Railway stations and waiting rooms, and passenger coaches, where large numbers of people necessarily congregate, offer a fertile field for the dissemination of the germs of this dread malady. Your committee respectfully urges upon all commissions, the propriety of immediate action, with view of having all station buildings placed and kept in proper sanitary condition. It is further urged that after consultation with the health officials of your states, instructions be issued to railroads, to be promulgated to all agents, as to proper care of waiting rooms, with respect to ventilation, heating, disinfectants, etc., with a view of minimizing the chances for the spread of this scourge."

Public Ownership and Operation

There is now before Congress what is known as the Sims bill, embodying the so-called "Plumb Plan" for government ownership and labor operation of the carriers. It is apparent that so far as it has gone it has gained little support in Congress, and that it will not have serious consideration in the framing of railroad legislation. It is the most radical movement toward government ownership yet broached, but the fact that sentiment for it has been aroused and fostered by as well organized and widespread propaganda as can well be imagined has given it publicity which it does not merit. There is need, however, of the committee's calling attention to the fact that so deep-rooted in some quarters has become the belief in this measure by the use of propaganda that it must be combated by sane dissemination of information and not summarily dismissed as visionary.

We cannot fail, also, to note the growth of the nationalization idea in this country, especially in the middle west. North Dakota has made more rapid strides in socialization than any other state in the union. We will be able in a few years to judge dispassionately of the proposition.

The movement toward public ownership and operation has received succor from a wide variety of sources. The argument that the public should hold in its name the fee and title of those activities which serve the public and which the public regulates is an argument which many people accept as the last word on the subject. The argument that the public can do as it pleases with that which is its very own is in many quarters equally conclusive. One of the arguments that is seldom used, and never can be truthfully used, is that public ownership and operation is more efficient than private ownership and private operation. Instances do exist where a well-managed, publicly-owned property is more efficient than a poorly-managed, privately-owned property, but these are rare and do not in any way weaken the statement that the final desideratum in a public property is that degree of efficiency which is being obtained under private ownership and operation.

There has been considerably more agitation for public ownership during the past few years than ever before. The underlying reasons are many, and may perhaps all be traced back to the war and the conditions growing out of it. The reasons for the impetus given to the movement for public ownership and operation may briefly be summarized as follows:

1. The propaganda started by the governmental control of wire lines and railroads.
2. The failure of utility managements to meet the increased demands upon them.
3. The failure of regulatory bodies, either state or local, to sense the seriousness of situations and to give utilities the needed assistance in time to avert disaster.
4. The inherent thought with many people that public ownership and operation is a panacea for all ills.
5. Increased rates have had a great effect.

Your committee recommends that the members of this organization as individuals and as members of regulatory bodies keep awake to the tendency and see to it that whatever legislation is perfected to help solve the problem be the result of experience and study.

This report was not concurred in by all members of the committee, George R. C. Wiles, chairman of the West Virginia Public Service Commission, filing a supplemental report stating that the committee's report was not vigorous enough in its denunciation of government ownership; W. G. Busby, chairman of the Missouri Public Service Commission, objected to some of its clauses, and Lawrence B. Finn upheld its conservative language.

State and Federal Legislation

Your committee met in conjunction with the Executive and Special War committees, and the president of the association on two occasions in Washington deliberated for several days each time and attended congressional committee hearings at which the results of their conferences were presented.

The first meeting was in January, 1919, and the position taken is as follows:

First, that no general reconstruction of the laws relating to carriers should be attempted by the Congress then in session, but that certain remedial legislation was imperatively needed.

Second, that federal control of the carriers should be subjected to the authority of federal and state commissions as it existed prior to government operation.

Third, that the proposal to continue federal operation of the railroads five years beyond the ratification of peace treaties, and the wires indefinitely, be rejected, and that Congress provide in lieu thereof that the railroads be returned to their owners on December 31, 1919, and the wires on June 30, 1919.

Fourth, that the Commerce Act be amended so as to provide for co-operation between the Interstate Commerce Commission and the state commissions affected in the establishment of non-discriminatory state and interstate rates.

Fifth, power to merge all railroad operation into one system in times of stress or emergency should be lodged in some federal authority, but the conditions under which the authority may be exercised should be carefully defined and provision made for the return of the properties when such conditions cease to exist. Consolidations should be permitted when in the public interest as determined by the Interstate Commerce Commission on interstate roads and by the proper state authorities as to terminals and intrastate roads.

Sixth, the construction of additional railroad facilities should be limited to those required by public necessity and convenience, with concurrent jurisdiction over the subject in both state and federal authorities as to interstate roads and where the proposed construction substantially affects

interstate commerce. The states should have exclusive jurisdiction over spur and industry tracks.

Seventh, the issuance of securities by interstate carriers should be regulated by the Interstate Commerce Commission.

Eighth, the membership of the Interstate Commerce Commission should be increased or state commissions empowered to act as regional commissions under the federal commission.

Ninth, co-ordination of railway and water transportation systems should be provided for and the regulating tribunals empowered to fix minimum as well as maximum rates.

Tenth, shippers should have the right to route traffic except in cases of emergency.

Eleventh, the proposal to empower the Interstate Commerce Commission to fix the wages of railroad employees was disapproved as a serious interference with the efficiency of the commission along other lines.

Twelfth, the proposal to create a federal secretary of transportation was disapproved; also the federal incorporation of the carriers.

Thirteenth, in the event extensive consolidations of the carriers take place, a larger control by both nation and state was favored.

The second meeting of the Association committees was held on the Esch-Pomerene bill. The consensus of opinion of the members present was that, assuming the constitutionality of the bill, it would deprive the states of practically all their powers over the railroads and wires. This conference recommended several amendments to the bill.

On September 3, 1919, Senator Cummins, chairman of the Senate Committee on Interstate Commerce, introduced a bill, which, together with the Esch-Pomerene bill, is to become the foundation of national railroad legislation, in the opinion of your committee. The Esch-Pomerene bill, amended in harmony with the greater part of the suggestions made by your committees, is incorporated in the bill.

Your committee has been unable to confer as to the general wisdom of the bill, but we believe that it embodies the most practical plan of dealing with the railroads fundamentally that has so far appeared. The committee recommends, in view of the prestige the bill has by reason of its authorship, that the convention consider it in detail and take definite position as to all its provisions.

Grade Crossings and Trespassing on Railroads

In addition to recommendations in 1916 which were endorsed by the association, this committee strongly urges the adoption of standard signs showing the hours on duty of crossing watchmen and "STOP" signs which should be displayed when such crossings are left unprotected, similar to those approved by the Public Utilities Commission of Connecticut. It is very important to the public using the railroad crossings that dangerous crossings not protected by a watchman should be provided with movable warning signals or other devices.

With the popularity of the automobile as a medium of locomotion, there is a widespread demand for the elimination of grade crossings or the separation of grades, especially in populous communities where trains pass frequently and where the physical conditions are such as to prevent a clear view of approaching trains. The public welfare certainly requires that there should be some protective device at all dangerous crossings to warn the unwary. It would seem advisable to carry out the recommendations of your committee in 1916 in reference to the installation of uniform crossing signs, supplemented by automatic warning signals at grade crossings where traffic is more or less continuous and no flagman or crossing gates are maintained, and standard signs showing the hours on duty of crossing watchmen. Every crossing should be plainly marked if it is only to be the familiar crossed arms and sign "Look out for the Cars."

Force stop rises or humps in the road or a pile of rocks in the center of the highway calling attention to the proximity of a grade crossing undoubtedly do a good job of abruptly checking the speed of an automobile bowling along toward the crossing at a lively clip, but they are at best crude devices and temporary expedients. It is questionable whether they are more of a menace than an aid to safety. The carriers in the opinon of this committee should spare no pains in making their crossings safe, and at crossings in cuts there should be dugouts or yards to provide an avenue of escape in the event of an impending collision. It might be well to have all crossings at right angles where possible as a further means of safety to give a motorist or driver an opportunity of getting out of a tight place should such an emergency arise.

Some of the states already have laws providing for the prorating of expenses incurred in the elimination of grade crossings, for the removal of the old crossing and the establishment of a new roadway. The commissions of most states probably can apportion the expense between the railroad companies and the public when grade crossings are ordered eliminated or separated.

Practically every state in the Union has a law or laws designed to prevent trespassing on railroads and providing penalties for violation. However, judging from the large number of trespassing accidents occurring annually, it would appear that these statutes are not strictly enforced. It is out of the question to expect the railroad companies to police their entire rights of way to guard against trespassing. Every effort should be made to co-operate with the railroad companies in suppressing the trespassing evil and curtailing the casualties resulting therefrom.

Statistics and Accounts of Railroad Companies

We recommend that a resolution by the convention be adopted that will provide that operating expenses of steam railroads shall be divided between states on the following bases:

1. Maintenance of way and structure expense accounts shall be charged to the state in which the expense is incurred. All other maintenance of way and structure expenses which are incurred for the common good of a railroad system shall be divided between states on the basis of the allocated expenses for this group of accounts found chargeable to the several states through which the system runs.

2. Maintenance of equipment group of expenses as to yard engines shall be charged to the state in which the engine performs service. Maintenance of road locomotives shall be charged to the state in which the service is wholly performed, on train divisions which overlap state lines, the expense of maintaining such engines shall be apportioned between states on the locomotive miles made by the locomotive in each state. The expense of maintaining passenger train cars shall be divided between states on the car mile basis, for the different classes of passenger train cars stated in the Interstate Commerce Commission's accounting circulars, which require railroad companies to state separately the mileage of passenger train equipment. The expense of maintaining freight and work train equipment shall be divided between states on the freight car mile basis.

3. The traffic group of expenses shall be charged to the state in and for which the services are performed as far as possible; all other expenses of this group of accounts shall be divided between states on the basis of the allocated expenses found for the traffic expenses for each state.

4. The transportation group of accounts shall be charged to the state in which the services are performed; such accounts as station wages and expenses, yard wages and expenses, road train operating expenses that run over train divisions which lay wholly within one state, should be charged to the state affected. On train divisions which run

beyond the state line the expenses of operating such trains shall be prorated between states on the train mileage basis of the trains affected. All other transportation expenses which cannot be allocated by states shall be divided between states on the allocated expense basis found for the transportation group of accounts.

5. The expense of operating dining cars shall be divided between states on the dining car mile basis.

6. The general expense group of accounts shall be divided between states after all expenses incurred in and for an individual state have been charged to that state, on the basis of the found allocated expenses for the several groups of accounts, maintenance of way and structures, equipment, traffic, transportation, and dining car services.

Accrued city, county and state taxes shall be charged to the state in which the taxes are accrued. All other taxes shall be prorated between states on the basis of the allocated taxes.

The hire of equipment, debit or credit, shall be divided between states on the ratio of the freight train car mileage in each state to the total freight car lines of the system.

We further recommend that the convention go on record as favoring the following plan or method for dividing operating expenses between freight and passenger services after said expenses have been divided between states.

1. Maintenance of way and structure group of accounts shall be charged direct where possible to the class of service for which the expenses are incurred. By this we mean that the expenses of maintaining freight yards shall be charged to freight. The expense of maintaining passenger stations should be charged to passenger, and exclusively freight depots should be charged to freight service. Station buildings used in common for both classes of traffic should be divided between freight and passenger on the space occupied basis. All expenses incurred for the maintenance of railway and track structures used in common shall be divided between passenger and freight on the "gross ton mile" basis. The expense of maintaining roadway buildings such as water tanks and coal chutes, shall be divided between freight and passenger on the gross ton mile basis.

2. Maintenance of equipment expenses shall be charged direct to the class of service for which the expenses are incurred. Road locomotives that perform mixed freight and passenger services shall be divided between the two classes of business on the gross ton mile basis of the trains affected. The expense of maintaining yard engines shall be divided between freight and passenger on the switch engine hour basis.

3. Traffic expenses shall be charged direct to the class of service for which the expenses are incurred; where possible, the common expenses shall be divided on the allocated expense basis for this group of accounts.

4. Transportation group of accounts shall be charged direct where possible to the class of service for which the money is expended. The train despatchers and telegraph operators shall be divided between passenger and freight on the revenue train mile basis. Station employees' wages and expenses that cannot be charged direct shall be divided between freight and passenger on the time employed basis. The yard group of expense accounts shall be divided on the switch engine hour basis. All other unallocated expense accounts in this group of accounts shall be divided on the found expenses freight and passenger in the transportation group of expenses.

5. Dining car expenses shall be charged direct to passenger service.

6. General expenses shall be divided between freight and passenger on the found expenses for all of the other group of accounts described in former paragraphs on this subject.

We further recommend that the convention adopt a resolution recommending to the Interstate Commerce Commission that that commission change their present accounting rules so that the money spent for the maintenance of equipment where the car or engine is given a general overhaul, be charged to the depreciation reserve account.

Resolutions Adopted at Closing Session

The following resolutions regarding the railroad problem were adopted at the closing session of the convention:

"The thirty-first annual convention of the Railway and Utilities Commissioners, in convention assembled at Indianapolis, Ind., being fully advised as to the purpose for which the railroads were taken over by the government and the results of its operations; and being of opinion that the war emergency is now over and that there is no need for the further continuation of the government control of railroads, declares itself in favor of the return of the railroads to private ownership and operation not later than December 31, 1919. The transition from federal to private control should be made with as little disturbance as possible. Realizing that the immediate restoration of pre-war intrastate rates would result in violent discriminations between intrastate and interstate commerce, we thus recommend that the existing interstate and intrastate rates, fares, charges and classifications initiated by the director general may continue in force for a period not beyond July 1, 1921, unless sooner changed by the state or federal authorities.

"Congress is now considering remedial railroad legislation. We believe that certain principles should be incorporated into the law and do earnestly recommend the favorable consideration of the following:

"We favor the prompt merger, without friction, of all the carriers' lines, facilities and organizations into a continental and a unified system in times of stress or emergency.

"We favor the merger, within proper limits, of the carriers' lines and facilities in such part and to such extent as may be necessary in the public interest to meet the reasonable demands of our domestic and foreign commerce. Consolidations of interstate lines or systems should be made with the approval of the Interstate Commission, with ample provision for proper state authorities to appear and be heard for or against the proposition.

"We favor the consolidation of terminal facilities whenever the public interest will be promoted thereby. In these matters the local state authorities are in a better position to pass upon the merit of the question than a federal body and, therefore, we suggest that such consolidation should not be made without the approval of local authorities. In passing upon consolidations, the public officers should have due regard to the value of competition.

"We favor the limitation of railroad construction to the necessities and convenience of the public and believe that no new construction should be permitted without the issuance of a certificate of public convenience and necessity.

"If the construction is for a line passing between two or more states, there can be no objection to having the federal authorities approve the same, but its action should be in addition to and not exclusive of the action of local authorities.

"Federal authority over this subject should not extend to the construction of sidetracks, spur, industry, team or switching tracks, street cars and electric interurban lines or the extensions of lines to be located wholly within one state.

"We favor the control of the securities of interstate lines by the federal government under such laws, rules and regulations as will require copies of the applications to be filed with the proper local authorities in the states through which the lines operate.

"In respect to this question we do not believe that the power should apply to street car companies or electric interurban companies nor should it apply to telephone or telegraph companies, the major portion of whose physical prop-

erties, devoted to public use, measured by its value, is located within one state.

"We favor the development and encouragement of inland waterways and co-ordination of railroad land and water transportation systems.

"We believe that employees of public service corporations should be adequately compensated and that rates should be established on a basis which will permit the payment of just wages. Public service should not be jeopardized by strikes or lockouts. The responsibility of capital and labor is equal. Each owes to the public the highest measure of duty. Thus, we favor the development of some plan for the final determination of wage disputes.

"We favor the creation of a transportation board charged with the duty of making a comprehensive study of transportation conditions, rail, water and highway, including consolidations of railroad systems and terminals. The conclusion of this board should be submitted to the Interstate Commerce Commission and its functions should be wholly advisory.

"We do not believe that a transportation board should be given any of the jurisdiction which is now exercised by the Interstate Commerce Commission over rates, valuation, accounting, car service, safety appliances or any other duties now embraced by statute.

"We are opposed to federal incorporation of railroads, either permissive or required.

"In view of the inherent social and practical objections to the establishment of a definite guaranteed return to private service corporations, we wish to record ourselves as unalterably opposed to such a plan.

"Under any form of regulation, due consideration must be given to the necessity of preserving local control over the rates, service, accounting, extensions and abandonment of the properties employed in public service.

"We iterate the resolutions heretofore adopted by this convention favoring co-operation between state and federal authorities in respect to rates.

"Proper co-operation between these officials will eliminate, to a very great extent, unjust discrimination which may exist between state and interstate rates."

Other Business

A special committee appointed to select a place for the 1920 convention reported that it had decided upon Washington, D. C. The date set for the next national gathering of the commissioners is November 9, 1920.

The election of officers resulted in the selection of the following men, each by a unanimous vote: President, Walter A. Shaw, commissioner, Illinois Public Utilities Commission; first vice-president, James A. Perry, commissioner, Georgia Railroad Commission; second vice-president, Carl E. Jackson, chairman of the Wisconsin Railroad Commission; secretary, James B. Walker, secretary of the Public Service Commission of New York (First District), and assistant secretary, L. S. Boyd, librarian of the Interstate Commerce Commission, Washington, D. C.

The movement of wheat over the lines of the Atchison, Topeka & Santa Fe, in Texas, New Mexico, Oklahoma and Kansas was greater during November than any similar movement in the history of the Southwest. Much of the grain was loaded from heaps on the ground and the total movement was about 2,000,000 bushels, principally to Galveston, for foreign shipment. A total of 3,693 cars were moved from Texas and New Mexico during the last week of the month. It is estimated that there are still approximately 1,000,000 bushels on the ground waiting to be moved in Texas and about 500,000 in Kansas.

Train Accidents in September

THE FOLLOWING is a list of the most notable train accidents that occurred on the railways of the United States in the month of September, 1919:

Collisions

Date	Road	Place	Kind of accident	Kind of train	Kil'd	Inj'd
10.	Monongahela	Brownsville	bc	F. & F.	1	2
15.	Balt. & Ohio	Brooklyn	bc	F. & F.	0	6
21.	Phil. & R'd'g	Acorn	bc	P. & F.	1	8
23.	A., T. & St. F.	Kennedy, N. M.	bc	P. & F.	0	42
29.	Central N. Eng.	Holmes	rc	F. & F.	3	7

Derailments

Date	Road	Place	Cause of derailment	Kind of train	Kil'd	Inj'd
1.	Atlanta, B. & A.	Fitzgerald	washout	P.	2	14
18.	Merchts. B'dge.	St. Louis	d. eq.	F.	2	0
21.	Southern	Black Oak	b. rail	P.	0	1
21.	Minn. & St. L.	London Mills	b. wheel	F.	2	0
23.	Balt. & Ohio	Confluence	.....	P.	2	0
27.	Seaboard A. L.	Seacoast	malice	P.	3	0
28.	Kansas City M. & O.	Foard City	.....	P.	0	12
28.	Southern Pacific	Salinas, Cal.	exc. speed	P.	2	40

Other Accidents

Date	Road	Place	Cause of accident	Kind of train	Kil'd	Inj'd
*17.	Louisville & N.	Hygeia	boiler	F.	1	1

The trains in collision on the Monongahela Railroad, near Brownsville, Pa., on the 10th, were through freights, the trains meeting on a curve while running at a moderate speed. There was a dense fog at the time. One trainman was killed and two were injured.

The trains in collision near Brooklyn, Ohio, on the 15th, were westbound freight No. 97 and eastbound No. 60, second section, the latter consisting only of a locomotive and two cabooses. The enginemen and firemen jumped off and escaped, but six trainmen were injured. The cause of the collision was the failure of No. 97 to regard the superior right of the opposing train. Train No. 97 was on a side track at Willow, about 4 miles east of Brooklyn. No. 60 was a first-class train, and the first section sounded the whistle to warn the westbound train to wait for the second section. The engineman claims that this whistle was given at both the front end and the rear end of No. 97; the men at the front end say that they did not hear it, and they also failed to observe the flags on first 60; the men at the rear of the standing train did hear the whistle, but nevertheless they took no action to prevent the engineman from moving forward on the main track; and the collision occurred 1½ miles east of Brooklyn.

No. 97 was a train of about fifty cars, and as the side track was not long enough or it, a flagman had to be sent out to stop first No. 60; the engineman of No. 60 acknowledged the flag, but there was conflicting testimony as to whether he sounded the whistle again until he reached the rear end of the freight train. In or near the freight caboose there was a pilot, who saw the green flags on the passenger train and communicated by word of mouth with men on the passenger train, and with the rear brakeman of the freight; but neither the pilot nor the brakeman took any action to prevent their own train from proceeding. The train might readily have been stopped by the use of the conductor's valve in the caboose. The flagman claims that he swung his red flag as a stop signal, but the line of road is curved and he did not know that any one at the front end of the train saw his signal. He and the pilot assumed that the engineman and the conductor (who was on or near the engine) had probably received some order from the passenger train. The freight had moved forward and cleared the main track before the passenger reached the east switch.

The train despatcher, in issuing orders to the freight had

*Abbreviations and marks used in Accident List:
rc, Rear collision——bc, Butting collision——xc, Other collisions——b, Broken——d, Defective——unf, Unforeseen obstruction——unx, Unexplained——derail, Open derailing switch——ms, Misplaced switch—acc, obst., Accidental obstruction——malice, Malicious obstruction of track, etc.——boiler, Explosion of locomotive on rad——fire, Cars burned while running——P. or Pass., Passenger train—F. or Ft., Freight train (including empty engines, work trains, etc.)—Asterisk, Wreck wholly or partly destroyed by fire——Dagger, One or more passengers killed.

furnished no copy for the pilot, explaining this by saying that he thought the conductor was better qualified for duty on that part of the road than the pilot was. The pilot had protested, when called, that he was not fully posted on the characteristics of the line, but he was told that the trainmaster said he must go. On reaching the train the conductor told the pilot that he did not need a pilot. Sometime after the freight had started from Willow the pilot asked the conductor, who had just come back from the front end of the train, where he was going for second No. 60; the conductor said that they were going to R D Tower, and that "second No. 60 has better stay there." The pilot, even then, did not ask to see the conductor's orders; he, the conductor, had been on that run for six or seven months and, said the pilot, must know more about the work than himself.

The men in charge of the freight train had been on duty about 13 hours, and all of the men, of both trains, were experienced and with long records of satisfactory service, except one brakeman; but the conductor and the pilot of the freight had been disciplined for not properly protecting their trains by flag, and the engineman of the freight had been responsible for a rear collision.

The investigator for the Interstate Commerce Commission concluded that all of the men involved had been inattentive to their duties; and he did not attempt to clear up all of the discrepancies in the statements of those who testified.

It appears that space interval rules are in force on this part of the road for the protection from each other of first-class trains moving in the same direction; and second No. 60 was held at R D Tower, the first office west of the point of collision, until first No. 60 had passed South Park, the first office east of the point of collision.

The trains in collision near Acorn, Pa., on the 21st were southbound passenger No. 112, and a northbound extra freight. The fireman of the freight was killed and eight passengers were injured. The collision was due to failure of the men in charge of the freight to observe, by the schedule of train No. 112, that it ran on Sunday. These men, Howard Long, conductor, and William Andrews, engineman, were tried in court on a criminal charge; and at Norristown, on November 15, they were sentenced each to six months' imprisonment.

The trains in collision near Kennedy, N. M., on the 23rd, were a westbound passenger and an eastbound locomotive without train. Forty-two passengers were injured, none of them very seriously. The collision was due to forgetfulness on the part of the engineman of the eastbound locomotive, who overlooked a train order.

The trains in collision on the Central New England at Holmes, N. Y., on the 29th, were an eastbound extra freight, and a train ahead of it consisting of two locomotives and one caboose, the caboose being occupied by a number of trainmen who were being carried to their homes deadhead. The freight, disregarding a stop signal, and also because not properly warned by the flagman of the leading train, ran into the caboose, and eight train-service men were injured, three of them fatally. Two other trainmen were injured by jumping off the engine of the freight just before the collision.

The train derailed on the night of the first of September, near Fitzgerald, Ga., was northbound passenger No. 20. The engine and first two cars were derailed at a washout and fourteen passengers were slightly injured.

The train involved in the accident on the Merchants Bridge, St. Louis, Mo., on the 18th, was an eastbound freight of the Wabash Railroad. One of the three locomotives at the rear of the train was thrown off the track while on the bridge and fell 50 ft. to the ground below. The engine turned over in its descent and as it fell against a pillar at or near the ground the steam dome was knocked off and the boiler exploded. The engineman and fireman were killed. The bridge was slightly damaged. The engine was derailed by the lifting of the wheels off the track on one side by the breaking of the main rod, the rod striking against a tie.

The train derailed at Black Oak, Tenn., on the evening of the 21st was southbound passenger No. 16, consisting of a locomotive and seven cars well filled. The engine and five cars were thrown off the track by a broken rail. Six passengers and one trainman were injured.

The train derailed near London Mills, Ill., on the evening of the 21st was a westbound freight. The engine was derailed by the breaking of a tender-wheel and with six loaded cars fell through a trestle bridge. The engineman and one brakeman were killed.

The train derailed near Confluence, Pa., on the morning of the 23rd was eastbound passenger No. 8. One of the two locomotives drawing the train, and the smoking car, were overturned. One fireman was killed and one engineman fatally injured. The collision occurred about 2 a. m.

The train derailed near Petersburg, Va., on the night of the 27th was southbound through passenger No. 5. The engine was thrown off the track at a switch, and with four freight cars and two baggage cars was overturned, the speed of the train at the time being about 40 miles an hour. The engineman, fireman, and one trespasser were killed. The derailment was due to malicious displacement of some part of the switch.

The train derailed on the Kansas City, Mexico & Orient, near Foard City, Tex., on the 28th was northbound passenger No. 4. Three coaches were overturned, and twelve passengers were injured.

The train derailed on the Southern Pacific near Salinas, Cal., on the 28th of September, was northbound passenger No. 77, first section. The engineman and fireman were killed, and 40 passengers were injured, most of the injuries being reported as slight; damage to cars and engine about $15,000. The train was running at excessive speed on a 10-degree curve.

The train involved in the accident at Hygeia, Tenn., on the 17th was a northbound freight. While it was standing in front of the station, preparatory to entering a side track, the boiler of the locomotive exploded, and several freight cars and the station building were set on fire. The fireman was killed, and the engineman injured. The explosion was due to low water.

Electric Car Accidents.—Of the eight serious accidents to electric cars, reported in the newspapers as having occurred in the month of September, two resulted fatally, a butting collision near Worcester, Mass., on the third, in which one person was killed and nine were injured, and a similar collision at Gary, Ind., on the 25th, when a motorman and one passenger were killed and about 50 passengers were injured. Both are reported as due to failure of block signals.

The Headquarters Yard "Goat" at Hailor, Mongolia, Where Some of the Russian Railway Service Corps Are Still Stationed

Doings of the United States Railroad Administration

Deficit for Ten Months—Regional Directors Given Authority to Curtail Passenger Service

The government's deficit from the operation of the railroads for the 10 months of this year ending October 31, as compared with ten-twelfths of the standard return guaranteed to the companies, was $269,768,158, according to a preliminary estimate issued by the Railroad Administration. The net operating income for the 10 months was approximately $479,000,000, as compared with the guarantee for that period of approximately $748,000,000.

In order to break even with the standard return it would be necessary to earn over $400,000,000 more of net operating income in November and December. In 1918 the net operating income for those two months was only about $85,000,000 but it was reduced by retroactive wage increases. The net operating income for October, in which the volume of traffic handled was greater than for October, 1918, or October, 1917, was about $77,000,000, whereas for October, 1918, it was about $87,000,000. After making allowance for the per diem balance, which will not appear until the November accounts are compiled, the Railroad Administration statement estimates that the net operating income for the month would be about $86,000,000. This does not reflect the loss of traffic caused by the coal strike but it does reflect extraordinary expenses incurred in making preparation for it. The statement authorized by the director general follows:

"Detailed statistics will shortly become available of the operating results for the month of October for practically all class 1 railroads and large terminal companies in federal operation. Those results are substantially affected by several abnormal conditions, two of them operating to understate the revenues and two operating to make the expenses more than normal. The revenues are understated by about $9,000,000, first, because beginning with the month of October per diem charges for the use of freight cars were reinstated with the result that in October there were approximately $6,000,000 included in car per diem debits while the corresponding car per diem credits which inure on this account to other railroads in federal operation on account of October transportation will not appeal until November, and second, because a large amount of revenue, estimated to be not less than $3,000,000, from coal traffic transported in October does not appear in that month because, on account of the impending coal strike, such coal traffic was held in transit in the last few days in October and the revenues shown on the waybills relating thereto where not taken in the revenues for the month. Taking these two conditions affecting revenues into consideration there would be a net operating income for the month of October, 1919, of about $86,000,000, but the results as shown by the reports for the month are about $77,000,000. The operating expenses were abnormally large, first, because of an extraordinary shifting of open top equipment in order to furnish the maximum number of cars to be loaded with coal in the two weeks immediately preceding the coal strike and, second, because of exceptional expenditures for maintenance of equipment growing out of the prevention of a normal amount of repairs in August on account of the unauthorized strikes of the shopmen. It is not practicable, however, to make a reliable estimate as to the effect of these two abnormal increases in operating expenses, although they are believed to amount to several million dollars.

"Last month a statement was made showing what the net gain or loss was by months from May to September, inclusive, after redistributing to those various months the appropriate charges on account of the back pay to shopmen. That table is repeated, together with a showing for October, taking into consideration in the last mentioned month the additional $9,000,000 of revenue which is not actually reflected on account of the two conditions above referred to:

Month	Net gain	Net loss
May	.....	$37,642,128
June	.....	26 031,860
July	.....	2,031,547
August	$12,397,112	.....
September	19,000,000	.....
October	11,000,000	.....

"The net gain or loss for these properties by months for the present calendar year, on the basis of the accounts as they stand is as follows:

	Net Gain or Loss to the Government after allowing for one-twelfth of the annual rental	
Month	Net gain	Net loss
January	.....	$57,782,557
February	.....	65,439,850
March	.....	64,881,856
April	.....	48,757,056
May	.....	33,642,128
June	.....	22,031,800
July	$1,968,453	.....
August	16,397,112	.....
September	2,392 584	.....
October (Estimated)	2,000,000	.....
Net loss for ten months		$269,768,158

"The following comparison of net ton miles per mile of road per day indicates that the freight business during the month was greater than in October, 1918, and October, 1917, and about the same as in September, 1919.

	Revenue and non-revenue ton miles per mile of road per day		
Month	1919	1918	1917
January	4,275	3,878	4,770
February	4.002	4,591	4,511
March	4,059	5,273	5,192
April	4,134	5,471	5,257
May	4,524	5,226	5,617
June	4,615	5,423	5,694
July	4,878	5,487	5,441
August	5,075	5,691	5,351
September	5,625	5,731	5,217
October	5,651	5,584	5,385
Ten months ended October 31	4,687	5,234	5,168

"The preliminary reports on passenger traffic during October indicate a substantial increase over October, 1918, so that both freight and passenger traffic were greater than last year."

The Fuel Situation

Hopes that the offer of a 14 per cent increase in wages would induce a considerable number of the striking coal miners to return to work seem to have been disappointed. Although there has been a gradual increase in coal production the coal loading for Monday, December 1, was only 40 per cent of normal and the highest percentage reached on any day has been 48 per cent. Production was 42 per cent of normal on Tuesday. Director General Hines announced on Tuesday that with a view to the further conservation of coal by the Railroad Administration the regional directors had been instructed to review the situation carefully and had been authorized to eliminate passenger trains which can be spared with the least inconvenience to the traveling public. It was also announced that in pursuance of Dr. Garfield's order instructions had been issued placing coal transported on the inland waterways on the same basis as coal handled

by rail, that is subject to allocation by the Railroad Administration coal committees.

The 40 per cent of normal coal production allows practically no coal to be distributed to industries which will be obliged to shut down when their reserves are exhausted, and some of them have already had to do so. The available new supply is only about sufficient for the railroads, public utilities and retail dealers. The requirements of the railroads are being gradually reduced as traffic is diminished. The use of coal for coking has been reduced by 25 per cent.

None of the winter resort trains to the South scheduled to be put in service before January 1 will be put on.

Overtime Pay for Express Employees

In amendment No. 1 to Supplement No. 19 to General Order No. 27, issued on November 22, by Director General Hines, effective November 16, it is ordered that the following articles shall supersede and be substituted for the articles of the same numbers in Supplement No. 19 to General Order No. 27, applying to employees in express service in federal operation. Except as changed hereby, Supplement No. 19 to General Order No. 27 remains in full force and effect.

Article VII.—Overtime and Calls

(a) For all employees, excepting these coming within the provisions of Article VI, Section (b), Supplement No. 19 to General Order No. 27, and Article VIII of this order, time in excess of eight hours, exclusive of meal period, on any day will be considered overtime. When the full number of hours per week (produced by multiplying by eight the days of the weekly assignment) are worked, overtime will be computed at the rate of time and one-half time. Where the total hours worked in regular assignment do not equal the number of hours so produced, overtime will be computed pro rata until the weekly period is fulfilled; thereafter overtime will be computed at the rate of time and one-half time.

It is not the intention of this section to change the number of days upon which the present monthly or weekly wages are based.

(b) For employees coming within the provisions of Article VI, Section (b), Supplement No. 19, the first two hours of overtime accruing after eight hours of service within the spread of twelve hours shall be computed pro rata, and thereafter (including overtime after 12 hours) at the rate of time and one-half time on the actual minute basis.

(c) Employees who are notified or called to work outside of the eight consecutive hours, exclusive of the meal period and continuous service, constituting their regular assignment, shall be paid a minimum allowance of two (2) hours at time and one-half time for 2 hours work or less; if held over 2 hours, time and one-half will be paid, computed on the actual minute basis.

(d) Exclusive of employees whose regular assignment includes Sundays or holidays, employees notified or called to work on Sundays and or holidays will be paid not less than a minimum allowance of two (2) hours at time and one-half time for 2 hours work or less, and thereafter on the actual minute basis at the pro rata hourly rate. When the entire number of hours constituting the week-day assignment are worked, they shall be paid for at the pro rata hourly rate up to eight hours service, with time and one-half thereafter on the actual minute basis.

(e) Employees will not be required to suspend work during regular hours to absorb overtime.

Article VIII.—Hours of Service and Overtime Rules.

Train Service Employees

(a) For all employees in the train service, except those in combination service as defined in Article IX of Supplement No. 19 to General Order No. 27, two hundred and forty (240) hours or less in regular assignment shall constitute a basic month's work. Deadhead hourage properly authorized to be counted as service hourage. Time for trip of employees up to designated scheduled time of first station shown in working time-table after midnight on a car scheduled to leave prior to 12 o'clock midnight of the last day of a month will be credited to the month in which the train handling the car is scheduled to leave.

(b) Train service employees included in the preceding Section shall be paid overtime on the actual minute basis for all time on duty each month in excess of two hundred and forty (240) hours at the rate of time and one-half times the hourly rate which shall be determined by dividing the monthly wage by 240. Time shall be counted as continuous for each trip from the time required to report for duty until released from duty, subject to the provisions contained in the last sentence of Section (a) of this Article. Even hours shall be paid for at the end of each day period; fractions thereof shall be carried forward.

(c) Extra employees performing road service in the place of a regularly assigned employee or on an extra assignment shall be paid the compensation a regularly assigned employee would receive for the same service, which will be determined, in the case of a regularly assigned run or trip over the same district, by dividing the monthly wage by the number of trips (initial terminal to final terminal) required for a month's work; for a trip where there is no regular assignment the compensation will be determined by multiplying the time on duty by the following rates per hour:

Express messengers .....50c.
Express messenger helpers.....40c.

The minimum allowance for a trip where there is no regular assignment will be eight hours. For the purpose of calculating time under this Section, where time end at first station shown in working time-table after midnight, the trip will not be considered as completed until released at terminal.

Article X.—Relief Period

Not less than 96 hours off duty each calendar month in 24 consecutive hour periods, or multiples thereof, will be allowed at designated home terminal for employees specified in Article VIII whose assignment and service do not permit of at least 12 hours off duty period at their designated home terminal each 48 hours. Employees required to work on assigned lay-over days will be paid extra therefor on the basis provided in Section (d) of Article VII.

Consolidated Classification to Be Put Into Effect

The director general has authorized the publication and filing with the Interstate Commerce Commission, effective on December 30, 1919, of Consolidated Freight Classification No. 1, which is a reissue in one volume of the Official, Southern and Western classifications.

This new classification, which is a substantial step toward uniform classification, is published in accordance with the Interstate Commerce Commission's recommendation in the Consolidated Classification Case, in which the commission approved the uniform rules, descriptions, minimum weights and package requirements as proposed by the classification committee of the Railroad Administration, but did not approve the changes proposed in ratings except as the establishment of new items may indirectly effect changes, and such as may be a reasonably necessary part of the establishment of uniform descriptions, specifications, or minimum weights.

In publishing this new classification the director general has followed all of the recommendations of the commission, except that he has modified Rule 10, applying on mixed

car loads, so that in Southern and Western classification territories the provisions of the rule are applicable only in connection with class rates. This modification has been made in response to the request of many shippers that the mixed carload rule should not be made effective in those territories. The rule as adopted will provide uniformity in all territories as to shipments moving at class rates, but in the South and West the exception on commodity rates will make no change in the movement of freight taking commodity rates, of which there are many more in the South and West than in the East or Official Classification territory, and it is believed that this modified rule will more nearly fit the different conditions and meet with more general approval by the shippers than would the rule as proposed by the classification committees.

Through Export Bills of Lading Via North Atlantic Ports

On June 28 announcement was made that an understanding had been reached between the Railroad Administration and practically all the steamship companies operating on the Pacific coast under which those companies would assume any demurrage or storage charges for which they might be responsible in connection with through export bills of lading issued by the railroads under federal control through those ports, that understanding to be effective as soon as tariffs could be published. At the same time announcement was made that a similar understanding had been reached with Osaka Shosen Kaisha, which had recently inaugurated service between the port of New Orleans and the Far East. It was stated that negotiations to bring about a similar understanding with steamship companies operating from Gulf and South Atlantic ports were being conducted and also that efforts made by the Railroad Administration to bring about the same understanding as to North Atlantic ports had up to that time proved unsuccessful, the steamship companies serving North Atlantic ports having failed to assume the storage or demurrage as had been done with regard to Pacific ports. It was added that in order to go as far as possible to meet the desires of exporters and pending further discussions with steamship companies, the Railroad Administration was making arrangements to issue instructions to restore through export bills of lading via North Atlantic ports on the basis that prevailed prior to January, 1918; namely, that through bills of lading would be issued to shippers who would agree to assume any demurrage or storage charges which might accrue in accordance with published tariffs.

Announcement is now made that in pursuance of an agreement entered into between the Railroad Administration and the Shipping Board through export bills of lading will be issued in connection with the Shipping Board or its agents under practically the same conditions outlined. The following is the basis of the arrangement agreed upon with the Shipping Board:

Through export bills of lading will only be issued when founded on written ocean contract, and then only when shipper gives written guarantee that any demurrage or storage charges accruing at the seaboard will be paid (see Exception).

Exception

In pursuance of an agreement entered into between the United States Railroad Administration and the United States Shipping Board, through export bills of lading will be issued in connection with the United States Shipping Board and or its agents on the following basis:

1. Through export bills of lading will be issued when founded on written ocean contract with the United States Shipping Board and or its agents.

2. Carload freight covered by through export bills of lading issued in connection with the United States Shipping Board and or its agents will be held in warehouse, or, at option of carriers, in cars, (free of charge at the port of exit for a period of not exceeding 15 days, exclusive of date of arrival).

3. In the event of the omission or failure of the United States Shipping Board and or its agents to clear carload freight on any vessel for which booked, all demurrage or storage charges accruing after the period of free time of 15 days shall be paid by the United States Shipping Board.

4. If the rail carriers fail to transport shipments regularly booked to the port in time to clear on steamer for which specifically booked, demurrage or storage charges will not apply until announced date of the steamer on which it is again booked, after which the liability of the United States Shipping Board will be the same as in connection with the original tranaction.

5. In the event storage or demurrage charges should accrue, due to interference with transportation by shipper, or his agents through the issuance of orders to hold such freight, or to divert such freight, or due to delay in securing, or error in preparing proper export documents, or for any other cause for which shipper or his agent may be responsible, such charge shall be collected from and paid by the shipper.

6. The arrangement covered by the five preceding paragraphs is applicable only in connection with carload export freight moving under through export bills of lading and which has been booked for transportation on vessels owned or operated by or for the account of the United States Shipping Board via the following named ports and agents of the United States Shipping Board:

Boston — Lawrence & Co., via Providence and Portland, Me.; J. S. Emery & Co.; Red Star Line; Atlantic Transport Line; American Line; C. H. Sprague & Sons; Patterson & Wylde.

New York — Moore & McCormick; New York & Cuba Mail; France & Canada SS Co.; U. S. & Brazil SS Co.; Munson Steamship Line; Kerr Steamship Line; Barber Steamship Line; Oriental Navigation Co.; J. L. Elwell & Co.; South Atlantic Maritime Corp.; Independent Steamship Co.; U. S. & A Line; Luckenbach SS Co.; A. H. Bull & Co.; W. R. Grace & Co.; Nafra Line; Red Star Line; Cosmopolitan Line; The Globe Line; American Line; J. H. Winchester & Co.; Atlantic Transport Co.; Phelps Bros.

Philadelphia—American Line; International Freighting Corp.; Red Star Line; Atlantic Transport Line.

Baltimore—Red Star Line; Export Transportation Co.; Baltimore Steamship Co.; Standard Steamship Co.; Baltimore Oceanic Steamship Co.

Norfolk—American Line; Harriss McGill & Co.; Robert Hasler.

As indicating the attitude taken by the Railroad Administration the following is an extract from a letter sent by the representative of the Railroad Administration to the Secretary of the Trans-Atlantic Associated Freight Conferences, which is an association of the principal foreign lines operating out of North Atlantic ports:

"Referring to conference in New York with Messrs. Peteroff, Love and Blake, the committee appointed by your association to confer with the undersigned relative to demurrage and storage charges at North Atlantic ports on export traffic.

"The proposition that we submitted contemplated that the interest responsible for the accrument of demurrage or storage, should assume the amount,—that is to say,—if the railroad fails to deliver the cargo at port in time to connect with designated sailing, demurrage or storage charges would

be waived; and on the other hand, if the steamship company failed to lift the cargo within the free time period, the steamship company should pay any charges that might accrue.

"In the event storage or demurrage charges should accrue, due to interference with transportation by shipper, or his agent, through the issuance of orders to hold such freight, or to divert such freight, or due to delay in securing, or error in preparing, proper export documents, or for any other cause for which shipper or his agent may be responsible, such charges shall be collected from and paid by shipper.

"We also offered to extend the present free time period, which is 10 days, to 15 days, although the Interstate Commerce Commission has held that the 10 days period is reasonable.

"We also advised your committee that the United States Shipping Board had accepted our proposition, and that tariffs would be published accordingly, as quickly as might be possible.

"Your committee rejected the proposition, which in our judgment, was a fair and liberal one in all the circumstances. We believe you will agree with us that differing conditions on export traffic at the same ports are impracticable, or at least, undesirable. Furthermore, we feel that as a progressive measure in transportation of export traffic, the time has come when the shipper should know, at the time he contracts for shipment, what the through transportation charges will be, and that the plan that has heretofore obtained, of attempting to hold the shipper responsible for something for which he is not responsible, cannot any longer be justified."

Terminal Committees Appointed and Special Storage Charges Imposed

To study the expedition of the movement of freight cars, both loaded and empty, within terminals in order to overcome avoidable delays and thus increase the efficiency of the freight car equipment of the country, special terminal committees have been arranged for at 70 of the principal terminals of the nation, each to be composed of local railroad representatives and a representative of shippers. The work on these committees will be pushed vigorously and every possible effort made to prevent delays to freight cars at terminals.

The Railroad Administration has received numerous complaints recently that refrigerator cars were being unduly detained at destinations and that cars loaded with lumber held for reconsignment were also being unduly held. During the present emergency, in order to prevent undue detention of equipment, authority has been given to publish immediately for account of all carriers under federal control effective on seven days' notice, the following rules:

1. On refrigerator cars which are not unloaded at the expiration of five days after the hour at which free time begins to run under the demurrage rules, a storage charge of $10 per car will be assessed for each day or fractional part of a day thereafter that such car is held under load.

2. On cars loaded with lumber held for reconsignment, a storage charge of $10 per car will be assessed for each day or fractional part of a day that a car is held for reconsignment after 48 hours after the hour at which free time begins to run under the demurrage rules.

3. These charges will be assessed regardless of whether cars are held on railroad hold tracks or delivery tracks, including consignee's or other private sidings and will be in addition to any existing demurrage and storage charges.

These rules were authorized for publication after consultation with shippers.

Number of Bad Order Cars Reduced

Since the unauthorized shopmen's strike early in August, which interfered with the repairing of cars, very gratifying progress has been made in connection with the bad order car situation, according to a statement authorized by Director General Hines. Excluding cars held out of service as not worth repairing, the percentage of bad order cars has fallen from 172,270 or 6.9 per cent on October 4, to 146,702 or 5.8 per cent on November 1. Including cars held out of service as not worth repairing the percentage of bad order cars has fallen from 191,656 or 7.6 per cent on October 4, to 166,514 or 6.5 per cent on November 1.

Miles Per Car Per Day Increased in September

The volume of freight traffic in September nearly approached the record of last year, according to the monthly report of the Operating Statistics Section. The net ton miles of revenue and non-revenue freight handled amounted to 38,860,311,000, a decrease of only 1.8 per cent as compared with September, 1918. Train miles decreased 3.5 per cent and car miles decreased 4.8 per cent, while the loaded car miles increased 4.8 per cent. The net ton miles per mile of road per day were 5,625 as compared with 5,731. The net ton miles per train mile show an increase of 1.8 per cent, from 735 to 748, but the net ton miles per loaded car mile shows a decrease from 30.2 to 28.3.

The percentage of loaded to total car miles was 69.6 as compared with 66.9 in September last year. The percentage of unserviceable freight cars shows an increase from 6.5 to 8.5 and the number of serviceable cars was 2,265,549 as compared with 2,304,497 in September last year. The average miles per car per day was 26.55 as compared with 26.5 last year and the net ton miles per car day averaged 523 as compared with 535. For the nine months ending with September the net ton miles amounted to 288,485,362,000, a decrease of 12 per cent as compared with last year. This was handled with 14.1 per cent less train miles and 8.6 per cent less car miles.

Comment has been made, from time to time, upon the fact that the average miles per freight car per day made by the railroads during the early part of this year was relatively low. The Railroad Administration has explained that the low average per car per day in the early part of the year was due in part to the fact that the freight business was exceedingly low and that many cars were on that account entirely out of service for the time being and yet these cars out of service were figured with the divisor which is used to determine car miles per car per day and thus diminish the resulting average. The fact that this explanation was correct and also the fact that increased efficiency is being attained is shown by the figures for September when the increased business was reflected and when the average miles per freight car per day made by the railroads exceeded the record of September, 1917, and has equaled the splendid record of September, 1918, two months prior to the signing of the armistice, when business was unusually heavy.

The statistics compiled by the Division of Operation for the month of September, 1919, show the average miles per freight car per day for that month as compared with September of 1917 and 1918 to be as follows:

September, 1917	26.4
September, 1918	26.5
September, 1919	26.55

The method of making the foregoing computation is somewhat misleading as an indication of relative car performance for the reason that the divisor used to determine car miles per car day includes all cars entirely out of service for the time being.

Subtracting the latter figure and confining the computation to the efficiency of the cars in service, the average miles per freight car per day were as follows:

September, 1917	28.3
September, 1918	29.1
September, 1919	29.1

Results of the Gulf Coast Storm

THE EFFECTS on the railroads operating in the districts recently devastated by a tropical storm and tidal wave, which swept across the Southern Texas gulf coast, have but recently been fairly definitely determined. On account of the fact that the water driven onto sections of the main land by the storm receded very slowly, it has been practically impossible up to this time to ascertain the amount and extent of the damage done to the right of way of lines passing through this district. However, the conditions on some of these lines have been reported as follows:

The Gulf, Colorado & Santa Fe's main line escaped extensive damage, although a series of washouts on the causeway over Galveston Bay interrupted traffic for approximately 48 hours. On the Port Bolivar division the water thrown on the peninsula, on which a part of this line runs, has drained off slowly and several days elapsed before it was possible to do any repair work. As a result it was necessary, on September 16, to place an embargo on that district, covering freight and passengers for Seabreeze, Tex., Galveston and intermediate points, which embargo was cancelled on September 20. During that period freight and passengers destined to Galveston were detoured via Houston.

The main line on the Galveston division of the Southern Pacific was under water at several places between Seabrook, Tex., and Galveston, obstructing passenger service approximately 44 hours and freight traffic approximately 72 hours. On the El Paso division of the Southern Pacific, on the edge of the storm area, rainfall aggregating 7.5 inches for the first 36 hours quickly filled Osman Canyon, the head of which is approximately 50 miles north of the Galveston, Harrisburg & San Antonio main line, which follows the canyon several miles and crosses it a number of times, and completely washed out eight bridges, aggregating approximately 3,000 lineal feet, including one 144-ft. steel girder span, together with approximately one-half mile of bridge approaches and track. Temporary repairs were undertaken immediately, but continued rains and high water have been washing out foundations and greatly interfering with repair work. The latest estimate of property damage in this district is approximately $200,000. Traffic over this line was detoured and an embargo placed upon the sale of through tickets over Southern Pacific lines pending the restoration of service.

Six miles of track, including a long reef bridge, in the vicinity of Corpus Christi, on the San Antonio & Aransas Pass, were washed away, and heavy damage was also inflicted upon the Rockport branch of this road. The work of reconstructing the damaged portions has been greatly retarded by high water, which is now beginning to recede. The heavy rains which resulted in the washouts on the El Paso division of the Southern Pacific have swollen all streams in the territory served by the San Antonio & Aransas Pass, the Nueces and Frio rivers being out of their banks and endangering approaches. The total estimated damage on this line is $125,000.

Heavy damage was inflicted between Odem, Tex., and Corpus Christi on the San Antonio, Uvale & Gulf, approximately 13 miles of track being washed off the embankment. The approaches to bridges have also been washed out, and the decks and stringers swept away. Because of the high water, which has not yet receded, it has not been practicable to estimate the amount of property damage, but from casual inspections the damage is said to be in excess of $100,000. It will be at least 30 days, according to reports made by officers of the road, before the line can be opened for traffic.

The tidal wave which accompanied the tropical storm passed over the Gulf Coast Lines at several places, washing out the right of way at Lavaca, Tex., for a distance of one-half mile and damaging it to the extent of $2,000; at a point near Calallen, Tex., 5,500 ft. of track was washed entirely outside of the right of way and the ballast carried away. Near Angelita, Tex., one-third of the bank (which was 8 ft. high) was washed away and the track completely washed out for a distance of one mile, causing an estimated damage to the track and embankment at this point of approximately $10,000. At Kingsville, Tex., on the Gulf Coast Lines, the machine shop, roundhouse and car shop were damaged to the extent of $3,000, and the station at Port O'Connor, Tex., was completely destroyed, in addition to which a half mile of track was completely washed out, inflicting an estimated damage of $5,000. The latest reports indicate that the Gulf Coast Lines' fuel oil tanks at Aransas, Tex., were badly damaged and that much of the 30,000 barrels of fuel oil stored at this point has been lost. Such oil as is left in the tanks cannot be recovered for several months. After restoring the line between Houston and Corpus Christi another washout occurred at Agua Dulce creek near Driscoll, Tex., cutting off traffic on this line for 24 hours. The total damage on the Gulf Coast Lines prior to the Nueces river flood has been estimated at approximately $30,000, and when the present flood damage is computed and an accurate check made this damage will probably total close to $50,000.

In addition to the damage already enumerated, the heavy rains and water have softened roadbeds in many places in this district and the storm inflicted minor damage to the right of way and to terminal facilities, making it practically impossible to estimate the total amount of damage. Reconstruction work is being carried on as rapidly as possible by all of the affected railroads, and in the majority of cases traffic has already been restored to a normal basis.

Improvements on Jordan Spreader

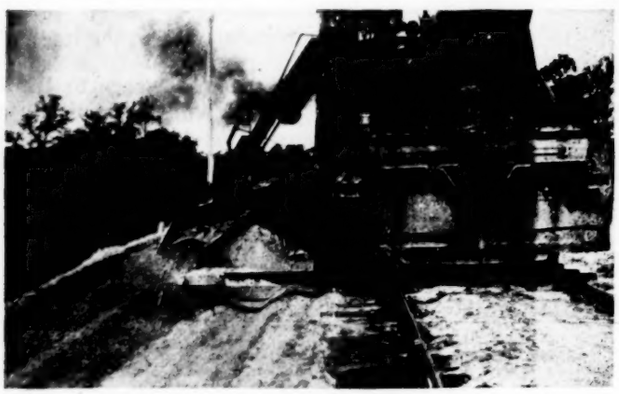
IN KEEPING with the increasing demands for labor saving devices, the O. F. Jordan Company, East Chicago, Ind., recently added two improvement to the Jordan spreader, which increase its range and adaptability. Under the old arrangement a solid bar rigidly supported the outer end of the spreader wing, keeping it horizontal at all times throughout its range of operation, which included a vertical movement of the entire wing and allowed it to cut to a maximum depth of 26 in. below the top of rail. The first improvement substitutes for the old rigid type of wing support and an adjustable brace operated by a 12-in. air cylinder mounted on the upper end and connected to the main air supply by a flexible air hose, thus permitting the same vertical movement as before. Through the addition of this air cylinder and the adjustable brace, a longitudinal movement of 39 in. is obtained along the length of the brace whereby the wing may be inclined to provide a maximum cutting depth at the tip of 60 in. or a slope of 34 in. along its length. This is especially important where it is desired to give a designated slope to enbankments as in the construction of second track, where settlement is to be provided for, etc.

The second feature of the Jordan spreader consists of a substitute wing or improved ditching attachment which is used in place of the regular spreading wings for the purpose of cutting new ditches or the cleaning of old ones. This wing is built in two sections which are hinged at the joint, the inner one being the templet or cutting wing which, because of its design, is enabled to produce ditches of the standard cross section desired by the road using the spreader. This wing is fastened to the same support used for the regular Jordan spreader wing, is raised and lowered, by the air from the train line and is controlled through the regular valve installations; the adjustable brace is fastened

in this case near the joint of the inner and outer wings. With the outer wing fully extended it will shape the ballast and cut a ditch and bank of any cross section up to 19 ft. from the center of the track and to a maximum depth of 3 ft. below the top of rail and by the use of a specially designed spreader it is possible to form a ditch 4 ft. below the top of rail.

The improved ditching attachment is intended for operation under two conditions, depending upon the depth of the cut. When used for ditching in cuts over 7 ft. in depth the outer wing is swung forward and held parallel to the car by two braces fastened at the tip of the wing and running in triangular form to an adjustable sliding support on the forward end of the car. This support is connected to the main raising and lowering supports by two braces, the two adjustable supports working together whenever the depth of cut is changed, thus keeping the same relatve position of outer wing and templet.

The tip of the outer or carrying wing is provided with a cast steel nose plow at its lower front corner, which is adjustable to different angles and when in operation holds the carrying wing down to its work. In actual operation the wing is lowered sufficiently so that the pocket formed by the



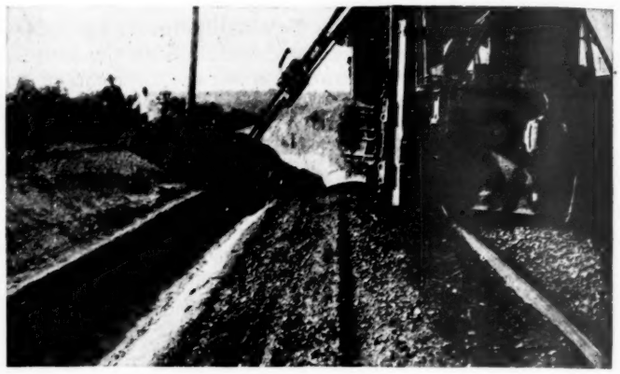
Outer Wing Swung Forward Forming Wing Pocket. Deep Cut

two wings will be filled as the spreader is pushed through the cut. This is repeated dropping the wing lower each time until the desired depth is reached, the pocket holding from 8 to 10 cu. yd. of material which is considered to be the maximum amount which can be handled at one time in a satisfactory manner. The usual procedure is to start the ditcher at the end of the cut where the dirt is to be wasted so that not more than 10 cu. yd. will be handled at a time, the spreader being then moved back so that approximately the same amount of dirt is removed in the process of each operation.

In forming ditches in shallow cuts, the carrying wing is swung back to form a continuation of the templet and the outer end, which is adjustable for slopes from horizontal to 1 to 1 is then raised to the desired height and secured in that position by a diagonal brace. Two additional braces are attached to the rear of the car to hold the wing out when at work. When operating the attachment in this manner, it is sometimes necessary to take two or three cuts to form a ditch and bank on account of the total amount of material to be removed.

The first of these improved ditching attachments, owned by N. K. Snead, railroad contractor, Huntington, W. Va., has been employed on the Gulf, Florida & Alabama where it worked in both deep and shallow cuts where no ditches of any kind had been maintained for a considerable length of time. Under these conditions and in open cuts not over 5 or 6 ft. deep where the original cross section of roadway was about 4 in. higher than the top of the ties, two and one-half miles of completed ditches were formed per hour, the bottom of the finished ditch being 36 in. below the top of rail and necessitating the removal of ⅔ cu. yd. of material per lineal foot of ditch. On a bisis of $125 per day for the entire cost of operating the ditcher the dirt was removed in this case for 0.17 cents per cu. yd. or at the rate of $6.25 per mile of completed ditch on one side of the track.

In cuts over 6 ft. deep the problem was somewhat different



Outer Wing Extended Cutting Both Ditch and Slope. Shallow Cut

though the original ground level was about the same as in the preceding case, being about 4 in. above the top of the tie. For this work it was necessary to move the material a considerable distance to be wasted on fills in spite of which 400 ft. of ditch was completed to a depth of 36 in. below the top of rail in 35 min. The dirt in this instance was moved at the rate of ⅔ cu. yd. per lin. ft. of ditch over an average distance of 250 ft. at a cost of approximately 3½

Standard Spreader Equipped with Adjustable Wing Brace and Air Cylinder

cents per cu. yd. or $121.44 per mile of completed ditch on one side of the track.

In case of a deep cut ending at a road crossing or where for other reasons it is impossible to waste the material on fills it may be carried to piles of from 30 to 50 cu. yd. each which will materially facilitate its handling with a steam ditcher.

Where ditches have already been formed and only cleaning is necessary the amount of material to be moved is much less with an accompanying reduction in cost. Ditches formed by this attachment were perfectly uniform in cross section, with no loose material in the bottom to retard the flow of water, nor was there any fouling of the ballast.

General News Department

At Brookfield, Mo., 700 citizens, mostly farmers and employees of the Chicago, Burlington & Quincy, have organized a co-operative store, to sell groceries, meats and clothing at cost. One store selling groceries, meats, bakery goods and work clothes is now in operation and it is planned to open a second one.

"The Increasing Necessity for Steam Railway Electrification will be the subject to come before the next meeting of the Western Railway Club which will be held at the Hotel Sherman, Chicago, on December 15, with a paper by Norman W. Stone, of the Westinghouse Electric & Manufacturing Company.

George Bradshaw, supervisor of safety of the Grand Trunk Western lines and the Pere Marquette, says that the Grand Trunk Western had the fewest casualties per 100 employees during the period of the recent "No accident drive" of any railroad in the United States having the same or a greater number of employees.

The Federal Trade Commission on December 2 began hearings on complaints against the continuance of the use of the Pittsburgh basing-point system in fixing prices for steel products, under which the freight rate from Pittsburgh is added to the price at Gary. The commission is to decide whether to issue a formal complaint against the practice.

The steam locomotives used in the recent test with the C., M. & St. P. electric locomotive at Eria, Pa., have 79 in. and 69 in. drivers. In the October 10 issue of the *Railway Age*, page 749, the diameters given for the Pacific and Mohawk type locomotives were 72 in. and 62 in., respectively, whereas these dimensions are for the driving-wheel centers; the diameter over the tires being 79 in. and 69 in.

At Steubenville, Ohio, two young men who stepped out of the way of a passenger train and into the path of a yard engine and who, in consequence, were both carried to a hospital, got their names into the papers recently, with a prominent headline, by reason of the fact that when they made this mistake they were on their way home from a safety-first campaign on the Pennsylvania Lines.

Delegates from farmers' organizations, denouncing the recommendation of government retention of control of the railroads for two years more, voted by the Public Ownership Conference held in Chicago, November 15, 16 and 17, declared that the action was the outcome of "steam-roller" methods. These delegates, from the South and Southwest, deny that such was the opinion of their constituents. William Hale Bowen, of Arlington, Tex., representing the Texas Farmers' Union, J. T. McElderry, of Talladega, Ala., representing the Alabama Farmers' Union, and John A. Simpson, of the Oklahoma Farmers' Union, in statements made public following the conference, assert that organized farmers oppose government control and operation of any private industry by a large majority. The delegates say that their organizations instructed them to oppose such government control resolutions, but that, despite their opposition, resolutions embodying the disputed points were "railroaded" through.

At the fiftieth anniversary dinner of the Western Society of Engineers, held at the Hotel Morrison, Chicago, on Tuesday evening, December 2, announcement was made of the setting aside of $5,000 by Robert W. Hunt, president of Robert W. Hunt & Co., Chicago, the income from which is to constitute a prize to be awarded annually to the person, not over 30 years of age, presenting the best paper before the society on the manufacture of iron and steel. Three prominent engineers are to constitute a committee on award, one of whom must be a person of recognized authority in the iron and steel field. In the event that the judges do not consider that any paper worthy of this prize has been presented during a given year, the income from the fund for that year will go to St. Luke's hospital, Chicago, while in the event that no award is made for five consecutive years, the principal itself will be turned over to the hospital and the trustees discharged. The establishment of this award has for its purpose the encouragement of the younger men and to direct attention to the problems of the steel industry in the Middle West.

Meetings and Conventions

The following list gives names of secretaries, dates of next or regular meetings and places of meetings:

AIR BRAKE ASSOCIATION.—F. M. Nellis, 165 Broadway, New York City. Next convention, May 5-7, 1920, Chicago.

AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—F. A. Pontious, Supervisor of Demurrage and Storage, C. & N. W. Ry., Chicago.

AMERICAN ASSOCIATION OF DINING CAR SUPERINTENDENTS.—S. W. Derr, C. R. R. of N. J., Philadelphia, Pa.

AMERICAN ASSOCIATION OF FREIGHT AGENTS.—R. O. Wells, Illinois Central, Chicago. Next annual meeting, June, 1920.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. R. Reynolds, C. G. W. R. R., Chicago.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—J. Rothschild, Union Station, St. Louis, Mo.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—E. B. Burritt, 8 W. 40th St., New York.

AMERICAN ELECTRIC RAILWAY MANUFACTURERS' ASSOCIATION.—C. F. J. Dell, 50 E. 42nd St., New York.

AMERICAN RAILROAD MASTER TINNERS', COPPERSMITHS' AND PIPE FITTERS' ASSOCIATION.—Otto E. Schlinck, 185 W. 5th St., Peru, Ind.

AMERICAN RAILROAD ASSOCIATION.—J. E. Fairbanks, 75 Church St., New York:

Section I, Operating (including former activities of Association of Railway Telegraph Superintendents). W. J. Frippe (chairman), N. Y. C. R. R., New York, N. Y.

Telegraph and Telephone Division—M. H. Clapp, U. S. R. R. A., Washington, D. C.

Section II, Engineering—E. H. Fritch, 431 South Dearborn St., Chicago.

Signal Division.—H. S. Balliet, 75 Church St., New York.

Section III, Mechanical (including former activities of Master Car Builders' and Master Mechanics' Association).—V. R. Hawthorne, 431 South Dearborn St., Chicago.

Section IV, Traffic (including former activities of Freight Claim Association).—Robert C. Wright, (chairman), Assistant Director, Division of Traffic, U. S. R. R. A., Washington, D. C.

Section V, Transportation (including former activities of Association of Transportation and Car Accounting Officers).—E. J. Pearson chairman), Federal Manager, N. Y., N. H. & H. R. R., New Haven, Conn.

Section VI, Purchases and Stores (including former activities of Railway Storekeepers' Association). J. P. Murphy, N. Y. C. R. R., Collinwood, Ohio.

Section VII, Freight Claims (including former activities of the Freight Claim Association).—H. C. Pribble (chairman), A., T. & St. Fee, Topeka, Kan.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W. Ry., 319 N. Waller Ave., Austin Station, Chicago.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—(Works in co-operation with the American Railroad Association, Section II.) E. H. Fritch, 431 South Dearborn St., Chicago. Next convention, March 16-18, 1920, Chicago.

AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—(See American Railroad Association, Section III, Mechanical.)

AMERICAN RAILWAY PERISHABLE FREIGHT ASSOCIATION.—E. F. McPike, 135 E. 11th Place, Chicago. Regular meetings, 2d Wednesday in March and September.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—R. D. Fletcher, 1145 East Marquette Road, Chicago.

AMERICAN SOCIETY FOR TESTING MATERIALS.—C. L. Warwick, University of Pennsylvania, Philadelphia, Pa.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—Charles W. Hunt, Engineering Societies Building, 33 W. 39th St., New York. Regular meetings, 1st and 3d Wednesday in month, except July and August, 33 W. 39th St., New York.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York.

AMERICAN TRAIN DESPATCHERS' ASSOCIATION.—D. L. Darling, Northern Pacific Ry., Spokane, Wash.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—F. J. Angier, B. & O., Mt. Royal Sta., Baltimore, Md. Next annual meeting, February 10-12, 1920, Hotel Sherman, Chicago.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—Willis H. Failing, C. R. R. of N. J., Jersey City, N. J. Next meeting, May, 1920, Atlantic City, N. J.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Sta., Chicago.

ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—(See American Railway Association, Section I, Operating.)

ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—(See American Railroad Association, Section V, Transportation.)
BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—M. J. Trees, Chicago Bridge & Iron Works, Chicago.
CANADIAN RAILWAY CLUB.—W. A. Booth, 131 Charron St., Montreal, Que.
CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 626 North Pine Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, New Morrison Hotel, Chicago.
CAR FOREMEN'S ASSOCIATION OF ST. LOUIS.—Thomas B. Koeneke, Federal Reserve Bank Bldg., St. Louis, Mo.
CENTRAL RAILWAY CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meetings, 2d Thursday in November, and 2d Friday in January, March, May and September, Hotel Statler, Buffalo, N. Y.
CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.—H. J. Smith, D. L. & W. R. R., Scranton, Pa.
CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S SUPPLY MEN'S ASSOCIATION.—D. B. Wright, Lehon Company, 45th and Oakley Sts., Chicago.
EASTERN RAILROAD ASSOCIATION.—D. G. Stuart, Washington, D. C.
FREIGHT CLAIM ASSOCIATION (See American Railroad Association, Section IV, Traffic).
GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter, 321 Grand Central Sta., Chicago. Regular meetings, Wednesday preceding 3rd Friday in month, Room 856, Insurance Exchange Bldg., Chicago.
INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—A. L. Woodworth, B. & O., Lima, Ohio.
INTERNATIONAL RAILWAY FUEL ASSOCIATION.—J. G. Crawford, 702 E. 51st St., Chicago. Next annual meeting, May, 1920, Hotel Sherman, Chicago.
INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabash Ave., Winona, Minn.
MAINTENANCE OF WAY MASTER PAINTERS' ASSOCIATION.—F. W. Hager, 1323 Hurley Ave., Ft. Worth, Tex.
MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York. Next annual meeting, May 25-28, Curtis Hotel, Minneapolis, Minn.
MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—A. P. Dane, B. & M., Reading, Mass.
MASTER CAR BUILDERS' ASSOCIATION.—(See American Railroad Association, Section III, Mechanical.)
NATIONAL ASSOCIATION OF RAILWAY AND UTILITIES COMMISSIONERS.—James B. Walker, 49 Lafayette St., New York.
NATIONAL FOREIGN TRADE COUNCIL.—O. K. Davis, 1 Hanover Square, New York. Next convention, May 12-15, 1920, San Francisco.
NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, Kelly-Derby Co., Peoples Gas Bldg., Chicago.
NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2d Tuesday in month, excepting months of June, July, August and September.
NEW YORK RAILROAD CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meeting 3d Friday. in month, except June, July and August, 29 W. 39th St., New York.
NIAGARA FRONTIER CAR MEN'S ASSOCIATION.—George A. J. Hochgrebe, 623 Brisbane Bldg., Buffalo, N. Y. Regular meetings, 3d Tuesday in each month, Tenjost Hall, Buffalo, N. Y.
PACIFIC RAILWAY CLUB.—W. S. Wollner, 64 Pine St., San Francisco, Cal. Regular meeting 2d Thursday in month, alternately in San Francisco and Oakland.
RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, 1116 Woodward Bldg., Washington, D. C. Next convention, May 12, Atlantic City, N. J.
RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 30 Church St., New York. Next annual meeting, December, 1919, New York, N. Y.
RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in month except June, July and August, Americus Club House, Pittsburgh, Pa.
RAILWAY DEVELOPMENT ASSOCIATION.—D. C. Welty, Missouri Pacific R. R., Little Rock, Ark.
RAILWAY ELECTRIC SUPPLY MANUFACTURERS' ASSOCIATION.—J. Scribner, General Electric Co., Chicago. Annual meeting with Association of Railway Electrical Engineers.
RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—D. L. Eubank, Galena Signal Oil Company, Richmond, Va.
RAILWAY FIRE PROTECTION ASSOCIATION.—G. L. Ball, St. Louis-San Francisco Ry., St. Louis, Mo.
RAILWAY REAL ESTATE ASSOCIATION.—R. H. Morrison, C. & O., Richmond, Va.
RAILWAY SIGNAL ASSOCIATION.—(See American Railroad Association, Section II, Signal Division.)
RAILWAY STOREKEEPERS' ASSOCIATION.—(See American Railroad Association, Section VI, Purchases and Stores.)
RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa.
RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, Waterbury Battery Co., 30 Church St., New York.
ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—P. J. McAndrews, C. & N. W. Ry., Sterling, Ill.
ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August.
SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, West Nyack, Rockland County, New York.
SOCIETY OF RAILWAY FINANCIAL OFFICERS.—L. W. Cox, 1217 Commercial Trust Bldg., Philadelphia, Pa.
SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3d Thursday in January, March, May, July, September and November, Piedmont Hotel, Atlanta.
SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, Western Ry. of Ala., Atlanta, Ga.
SUPPLY ASSOCIATION OF AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—C. N. Thulin, Duff Manufacturing Company, 935 Peoples Gas Bldg., Chicago.
TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y.
TRAIN DESPATCHERS' ASSOCIATION OF AMERICA.—J. P. Finan, A. T. & S. F. Ry., Needles, Cal.
TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. R. R., Cleveland, O.
WESTERN ASSOCIATION OF SHORT LINE RAILROADS.—Clarence M. Oddie, Mills Bldg., San Francisco.
WESTERN RAILWAY CLUB.—J. M. Byrne, 916 W. 78th St., Chicago. Regular meetings, 3d Monday in month, except June, July and August.
WESTERN SOCIETY OF ENGINEERS.—Edgar S. Nethercut, 1735 Monadnock Block, Chicago. Regular meetings, 1st Monday in month, except July and August.

Traffic News

The shipment of approximately 500 deer carcasses daily through Birchwood, Wis., to the homes of hunters in Wisconsin and Illinois is reported as causing considerable delay to both passenger and freight trains in the Birchwood district.

The first big shipment of news print paper into the Great Lakes region of the United States from Western Canada recently arrived at Minneapolis, Minn. The shipment consisted of 26 carloads, made at Powell River, B. C., 2,000 miles away, and valued at $75,000.

A special terminal committee has been appointed to study the best means to expedite the movement of cars through the El Paso (Tex.) terminals. This committee will function in a similar manner to committees appointed in other large terminals. A. U. Tatlock, traffic manager of the El Paso Chamber of Commerce, has been appointed shippers' representative on the committee, the appointment having been made by Max Thelen, director of the Division of Public Service, United States Railroad Administration.

George R. Browder, traffic manager of the Container Club, Chicago, an organization intended to maintain proper standards for fibre shipping cases, has been appointed general manager in charge of the Chicago office,. He is to have general supervision over the activities of the club under the direction of the executive committee. The position of traffic manager has been abolished. W. S. Felt will continue to act as secretary and treasurer of the club, A. J. Neumann as assistant secretary-treasurer and Dr. E. O. Merchant as statistician.

Oregon is the state which forms the subject of the latest illustrated booklet which has been issued by the Agricultural Section, Division of Traffic, United States Railroad Administration. It has the endorsement of Governor Olcott and President Kerr, of the Agricultural College. Oregon, with a total area of 96,699 squares miles, has great diversity of soil and climate; irrigated lands with mild seasons; the broad prairies of the Central and Southeastern sections and the foothills of the mountain ranges. These latter offer innumerable home sites that for natural beauty are unexcelled. Information is given about public lands, including state schools and forest homesteads.

The Beauties of Arkansas are presented in an illustrated booklet issued by the Agricultural Section, United States Railroad Administration, to meet the demand of homeseekers and other investors for information. It contains descriptions of the three agricultural empires of the State—Alluvial Area, Coastal Plains and Ozarks. There are chapters on cotton, rice, corn, alfalfa, oats, wheat, peanuts, apples, peaches, strawberries, melons, grapes, Irish potatoes, sweet potatoes, pecans, beef cattle, hogs, sheep, dairying, poultry and bee culture. Almost always two, and often three, crops may be secured from the same tract of land in one year. No section of the United States offers natural advantages which are superior to Arkansas for livestock production of all kinds.

The report on overseas traffic for the week ended 26th November, shows 6,813 cars of commercial export freight received at North Atlantic ports, as compared with 832 cars for the same week of 1918, an increase of 5,981 cars, or 718 per cent. The deliveries to ships during the same period increased 6,497 cars, or 566 per cent. At South Atlantic and Gulf ports as of November 24, 1919, there were 11,589 cars of export freight on hand as against 12,289 cars on November 17, an increase of 700 cars. Of grains, 14,692,819 bushels were in elevators at North Atlantic ports in the week ended November 26, 1919. There were received during the week 3,473,231 bushels, while 5,100,666 bushels were cleared. There were 8,453,717 bushels of grain stored in elevators at Gulf ports on November 26, 1919, representing 82.3 per cent of the total elevator capacity.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF SEPTEMBER, 1919

Name of road.	Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
Alabama & Vicksburg	141	$150,665	$63,674	$230,352	$44,059	$44,506	$1,846	$77,776	$9,242	$180.038	78.15	$50,314	$11,417	$38,869	$22,663
Alabama Great Southern	312	590,596	223,247	859,854	151,894	232,054	11,007	312,133	17,548	730,574	84.96	129,280	24,728	104,391	—145,530
Ann Arbor	301	319,207	62,374	404,500	32,073	89,010	4,407	157,060	9,470	292,042	72.19	112,458	16,700	95,694	147,822
Arizona Eastern	377	179,665	51,913	256,250	51,037	62,854	1,648	92,789	15,733	227,327	88.71	28,922	16,282	12,597	—126,361
Atchison, Topeka & Santa Fe	8,665	12,735,280	4,068,102	17,873,535	1,844,440	4,292,109	141,567	5,249,647	228,497	11,724,846	65.59	6,148,689	649,655	5,494,096	4,229,978
Atlanta & West Point	93	110,144	84,037	222,304	27,936	42,133	3,051	79,989	6,659	164,148	73.83	58,156	8,500	49,656	—48,797
Atlanta, Birmingham & Atlantic	639	333,031	83,761	444,782	108,628	126,024	8,734	225,185	12,193	480,824	108.10	—36,042	16,000	—52,158	—61,440
Atlantic City	177	108,148	289,918	415,338	49,816	47,708	3,649	214,110	1,098	316,468	76.20	98,870	12,000	86,870	—79,486
Atlantic Coast Line	4,874	3,071,459	1,331,326	4,754,207	792,444	1,413,481	63,655	2,099,576	107,056	4,497,986	94.61	256,221	225,000	29,454	—818,080
Baltimore & Ohio, Chicago Terminal	90	.....	.....	217,785	38,609	75,514	1,280	129,667	4,529	254,613	116.95	—36,828	26,542	—63,373	36,970
Baltimore & Ohio	5,151	14,777,638	2,761,785	18,708,038	2,589,354	5,805,553	163,234	6,890,914	336,525	15,842,193	84.68	2,865,846	290,454	2,574,661	—1,445,427
Baltimore, Chesapeake & Atlantic	87	95,595	55,902	158,971	22,815	26,271	893	85,536	3,770	139,286	87.60	19,686	4,015	15,671	—8,739
Bangor & Aroostook	632	330,606	95,052	449,705	111,146	135,783	2,942	153,574	11,108	421,239	93.67	28,466	21,000	7,466	—57,307
Beaumont, Sour Lake & Western	118	89,319	27,532	122,190	16,637	19,173	2,517	43,213	5,046	86,586	70.86	35,603	2,700	32,885	—16,194
Belt Ry. Co. of Chicago	31	34,902	.....	403,135	33,807	86,412	366	200,958	9,095	330,637	82.01	72,497	15,682	56,815	162,853
Bessemer & Lake Erie	217	1,236,671	75,858	1,340,520	160,402	405,363	8,984	375,854	17,920	975,745	72.53	364,775	14,500	350,249	—355,163
Bingham & Garfield Ry	37	79,574	1,694	84,249	42,835	45,217	1,086	24,478	3,774	120,904	143.51	—36,654	11,549	—48,203	—193,861
Birmingham Southern	29	34,902	.....	42,524	4,538	5,667	717	24,957	3,403	39,283	92.38	3,241	1,999	1,242	—39,585
Boston & Maine	2,258	4,222,761	2,231,960	7,140,558	879,969	1,453,914	31,063	3,242,571	174,785	5,833,523	81.69	1,307,035	199,036	1,107,974	—792,133
Buffalo, Rochester & Pitts	589	1,241,948	138,593	1,446,194	215,897	536,710	12,538	563,191	32,805	1,363,151	94.25	83,043	27,000	56,038	—181,842
Buffalo & Susquehanna	296	211,555	6,040	221,764	51,773	116,439	1,940	73,419	8,401	251,972	113.62	—30,209	3,250	—33,459	—23,465
Canadian Pacific Ry. Lines in Maine	233	84,357	55,236	150,917	55,817	31,694	2,573	70,917	3,057	163,323	108.22	—12,407	11,000	—23,407	5,044
Charleston & W. Carolina	342	217,376	46,378	278,905	57,996	61,710	4,971	112,581	4,729	241,987	86.76	36,918	8,500	28,378	21,682
Central New England	301	621,086	27,326	671,899	140,540	119,829	3,144	233,577	13,477	510,566	75.98	161,333	16,000	144,661	—14,449
Central of Georgia	1,918	1,136,185	524,408	1,855,973	410,264	495,733	33,659	754,243	63,636	1,772,836	95.51	83,137	78,080	4,313	342,411
Central of New Jersey	685	3,045,337	830,361	4,131,526	545,261	1,290,030	26,707	1,906,006	73,046	3,859,452	93.41	272,073	333,192	—61,098	—1,148,090
Central Vermont	411	425,159	115,086	587,315	102,361	157,228	7,195	300,965	17,817	588,420	100.18	—1,105	17,400	—18,515	—63,181
Carolina, Clinchfield & Ohio	282	505,196	37,470	550,452	73,061	148,825	3,952	152,607	13,822	392,078	71.22	158,374	16,300	142,068	554
Chesapeake & Ohio	2,509	5,055,657	1,104,223	6,546,830	1,093,996	1,618,959	34,769	2,454,098	110,037	5,346,145	81.66	1,200,686	158,400	1,042,258	—998,653
Chicago & Alton	1,050	1,704,043	564,190	2,414,784	382,344	770,484	25,949	921,376	48,894	2,158,387	89.38	256,397	52,207	203,890	104,010
Chicago & Eastern Illinois	1,131	1,827,168	445,997	2,449,370	319,013	894,650	14,864	881,358	48,404	2,169,481	88.57	279,889	56,500	223,196	—371,265
Chicago & Erie	269	782,665	84,865	948,420	82,892	169,368	8,909	402,782	25,518	692,655	73.03	255,765	27,678	228,083	39,984
Chicago & North Western	8,090	9,927,449	3,400,304	14,504,392	1,979,708	3,042,024	74,956	5,670,907	263,631	11,129,071	76.73	3,375,322	475,000	2,897,801	429,147
Chicago, Burlington & Quincy	9,371	10,771,272	3,585,313	15,487,099	1,832,972	3,101,604	85,273	5,260,980	327,875	10,741,485	69.35	4,745,614	464,855	4,279,095	2,516,726
Chicago Great Western	1,496	1,502,843	547,488	2,204,613	336,310	465,946	25,177	828,522	49,850	1,720,856	78.05	483,757	54,975	428,279	131,439
Chicago, Indianapolis & Louisville	657	785,604	262,974	1,152,262	149,714	381,258	14,825	468,309	26,975	1,048,048	90.95	104,214	48,701	55,472	—143,632
Chicago Junction	12	.....	.....	329,441	89,181	69,932	106	219,574	5,752	384,545	116.72	—55,105	2,128	—57,237	16,856
Chicago, Milwaukee & St. Paul	10,648	10,929,605	2,855,022	15,137,097	2,308,215	3,874,965	97,206	5,916,508	351,369	12,591,212	83.18	2,545,885	539,252	2,002,115	—116,690
Chicago, Peoria & St. Louis	247	146,065	25,368	181,884	45,786	81,768	3,412	87,432	7,834	226,225	124.37	—44,341	6,100	—50,441	58,340
Chicago, Rock Island & Gulf	474	364,294	103,191	505,498	61,100	91,515	7,647	177,913	11,743	350,311	69.30	155,187	13,155	142,004	33,841
Chicago, Rock Island & Pacific	7,594	7,539,045	3,198,282	11,386,285	1,966,013	2,609,533	109,430	4,162,639	192,793	9,080,910	79.75	2,305,376	306,190	1,998,559	167,819
Chicago, St. Paul, Minn. & Omaha	1,749	1,745,141	738,145	2,639,486	393,813	513,691	24,625	1,058,026	64,275	2,069,375	78.40	570,111	130,992	438,510	—44,263
Chicago, Terre Haute & S. E	374	450,641	22,083	483,721	60,709	198,205	3,267	156,611	10,410	431,796	89.26	51,924	14,500	37,423	—97,967
Cincinnati, Indianapolis & Western	321	206,297	56,044	286,662	47,652	113,874	6,379	131,773	13,927	315,772	110.15	—29,110	14,537	—43,657	—92,224
Cincinnati, New Orleans & Texas Pacific	337	912,392	275,834	1,243,337	234,076	506,461	18,045	669,154	33,747	1,465,636	117.87	—222,299	37,001	—259,302	—296,220
Cincinnati Northern	251	230,984	20,867	259,607	28,371	62,945	2,112	86,914	5,495	185,838	71.58	73,769	13,400	60,369	—557
Cleveland, Cincinnati, Chicago & St. L.	2,395	5,258,521	1,624,216	7,474,754	780,044	1,412,045	77,840	2,732,152	105,742	5,161,694	69.05	2,313,060	166,000	2,145,702	—473,532
Colorado & Southern	1,099	853,121	274,807	1,206,750	181,256	309,124	8,992	394,084	33,483	936,010	77.56	270,741	47,000	223,559	—61,717
Colorado & Wyoming	41	24,160	1,300	77,637	12,439	12,345	213	31,980	3,705	60,682	78.16	16,955	4,000	12,955	10,419
Cumberland Valley	163	435,298	80,630	553,637	100,894	105,539	5,908	181,018	13,241	406,993	73.51	146,643	7,382	139,279	—162,161
Delaware & Hudson	875	2,571,153	3,743,356	3,131,892	379,248	1,000,596	33,043	1,290,712	113,762	2,838,184	90.62	293,708	60,000	233,707	—957,975
Delaware, Lackawanna & Western	956	4,399,394	1,159,418	6,213,781	769,931	1,521,875	48,323	2,445,393	121,121	4,968,244	79.95	1,245,537	318,427	926,096	—1,187,709
Denver & Rio Grande	2,593	2,491,425	787,474	3,498,069	459,455	774,712	20,129	1,052,754	72,391	2,432,469	69.53	1,065,601	115,000	950,082	197,280
Denver & Salt Lake	255	251,122	48,707	309,371	72,233	128,946	842	139,570	5,571	347,162	112.21	—37,790	9,000	—46,841	34,362
Detroit & Mackinac	381	110,871	31,934	152,449	28,099	43,472	5,351	60,941	16,907	154,753	101.52	—2,303	8,439	—10,743	—19,678
Detroit, Toledo & Ironton	454	305,819	17,064	339,384	90,130	95,441	4,249	145,628	12,948	348,396	102.66	—9,011	8,149	—17,160	—58,542
Detroit & Toledo Shore Line	61	269,414	.....	268,651	20,291	25,279	1,126	74,586	3,903	125,186	46.89	143,466	7,900	135,566	90,816
Duluth & Iron Range	292	1,013,570	19,080	1,006,006	104,543	128,830	800	219,896	15,558	470,154	46.98	635,852	55,046	580,787	—187,256
Duluth, Missabe & Northern	412	2,180,937	44,696	2,968,017	170,783	183,858	2,267	436,280	30,289	824,851	27.79	2,143,166	149,267	1,993,899	—282,225
Duluth, South Shore & Atlantic	598	311,596	121,311	461,308	86,702	84,752	4,067	184,971	8,190	373,742	81.02	87,566	20,000	67,496	30,204
Duluth, Winn. & Pacific	178	122,514	27,630	153,533	36,323	32,906	2,632	59,963	8,137	140,008	91.19	13,525	9,938	3,587	6,245
East St. L. Connecting	3	.....	.....	102,554	13,880	21,329	267	73,407	3,664	112,661	109.85	—10,107	2,000	—12,107	—7,367
El Paso & Southwestern	1,028	902,550	191,858	1,156,325	211,872	260,651	11,081	262,473	26,589	781,172	67.55	375,154	48,364	326,790	—236,272
Elgin, Joliet & Eastern	832	1,492,932	2	1,699,903	158,425	566,927	7,611	607,206	28,001	1,367,374	80.43	332,529	53,250	279,271	—196,052
Erie R. R.	1,989	6,904,200	1,206,752	8,881,185	1,046,221	2,748,803	64,901	3,756,711	193,790	7,859,716	88.49	1,021,469	269,475	750,501	579,505
Florida East Coast	764	437,654	173,515	704,357	132,511	165,464	7,428	257,823	25,807	596,358	84.66	107,999	42,547	65,081	219,922
Fonda, Johnstown & Gloversville	88	37,210	68,132	109,302	14,125	9,103	545	44,644	5,066	73,483	67.22	35,819	4,900	30,919	—17,720
Ft. Smith & Western	253	112,446	36,694	157,534	22,308	31,515	3,738	51,887	6,217	116,587	74.00	40,947	5,000	35,888	17,991
Cincinnati, Lebanon & Northern	76	78,115	8,736	101,794	31,104	21,625	1,320	54,533	1,001	109,584	107.65	7,790	4,404	—12,194	—16,262
Ft. Worth & Denver City	454	642,641	366,089	1,049,897	77,112	223,787	3,366	343,344	25,718	677,521	64.53	372,377	17,238	355,109	296,569

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF SEPTEMBER, 1919—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of									
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.			
Ft. Worth & Rio Grande	235	98,166	71,030	181,166	28,916	23,943	1,374	66,499	5,586	126,309	69.71	54,807	2,983	51,800	36,054
Galveston, Harrisburg & San Antonio	1,381	1,122,404	407,793	1,625,222	254,053	519,350	16,512	540,594	54,263	1,396,519	85.92	228,704	52,872	175,549	—180,129
Galveston Wharf Co	13	.....	.....	68,195	36,290	521	.....	23,261	960	79,134	104.61	—10,940	12,500	—23,440	—3,250
Georgia	328	378,428	133,516	562,078	58,834	96,108	9,846	244,046	17,447	426,450	75.87	135,627	5,950	129,677	—143,846
Georgia Southern & Florida	402	226,979	86,353	347,454	66,400	98,453	5,800	161,752	11,206	345,212	99.35	2,242	15,122	—13,134	18,347
Georgia & Florida	348	59,604	23,039	87,825	41,661	21,207	1,407	50,665	5,664	120,603	131.32	—32,778	4,206	—36,978	—47,810
Grand Rapids & Indiana	569	532,430	274,884	862,689	82,820	181,507	10,855	343,490	37,718	665,467	77.13	197,222	25,951	171,262	224,517
Grand Trunk Western Lines	1,001	1,615,122	347,013	2,141,971	289,992	330,977	19,108	879,926	46,960	1,571,550	73.36	570,420	56,742	519,345	191,808
Great Northern	8,171	8,110,754	2,010,451	11,077,055	1,337,500	2,098,380	66,125	3,918,455	146,103	7,701,444	69.52	3,375,611	566,158	2,808,591	24,801
Gulf & Ship Island	307	153,724	40,649	206,336	47,754	66,144	5,129	80,799	9,967	210,206	101.87	—3,871	10,216	—14,408	—51,838
Gulf, Colorado & Santa Fe	1,937	1,499,530	536,385	2,153,320	403,407	421,871	12,055	831,126	47,657	1,107,511	79.30	443,810	71,168	374,358	—69,546
Grand Trunk Lines in New England	172	101,022	47,373	165,572	111,066	62,102	2,894	115,964	10,357	310,028	187.22	—144,455	14,500	—158,955	—275,647
Gulf, Mobilye & Northern	461	175,230	50,504	239,234	51,766	66,115	6,954	108,887	11,435	241,581	100.98	—2,348	11,627	—14,021	—34,334
Hocking Valley	350	1,187,381	118,086	1,383,082	119,786	382,684	5,183	402,176	17,780	926,056	66.95	457,026	50,500	406,526	199,896
Houston & Texas Central	847	599,502	223,488	884,640	185,590	200,332	5,266	328,313	19,409	738,701	83.55	145,938	34,458	110,709	—2,256
Houston, East & West Texas	190	161,883	50,122	223,257	32,965	37,240	932	86,569	3,904	161,611	72.38	61,646	6,249	55,307	29,528
Illinois Central	4,799	6,968,926	2,147,700	9,840,095	1,919,941	3,221,334	78,836	3,815,589	215,509	9,299,157	94.50	540,938	432,384	105,895	—2,244,449
Indiana Harbor Belt	116	.....	.....	620,110	101,610	136,559	1,811	423,916	19,484	683,380	110.20	—63,270	9,964	—73,234	63,856
International & Great Northern	1,159	871,951	333,416	1,295,424	265,512	399,318	17,207	629,878	43,676	1,368,386	105.63	—72,962	23,506	—96,525	—264,511
Kanawha & Michigan	176	352,751	51,671	417,146	62,185	162,224	1,820	132,658	13,121	372,008	89.17	45,138	18,958	26,180	—24,601
Kansas City, Mexico & Orient	272	133,111	17,574	156,915	58,316	58,489	929	80,168	7,636	205,538	130.98	—48,622	6,250	—55,007	—73,816
Kansas City, Mexico & Orient of Texas	465	99,583	23,166	129,253	32,944	48,682	1,104	88,287	7,877	178,804	138.33	—49,550	5,000	—54,623	—5,871
Kansas City Southern	774	1,014,158	228,883	1,332,293	135,966	307,080	9,756	468,063	29,598	948,446	71.19	383,847	65,852	317,546	—18,867
Kansas City Terminal	27	.....	.....	129,012	29,996	31,862	.....	53,539	1,619	118,259	91.66	10,753	57,950	—47,197	—4,089
Lake Erie & Western	902	842,928	78,581	966,786	137,221	223,639	12,160	374,121	22,606	769,721	79.61	197,065	46,700	150,365	149,253
Lehigh & Hudson River	96	265,756	4,202	277,178	31,766	58,794	1,081	99,019	5,608	196,268	70.80	80,911	7,866	73,044	61,190
Lehigh & New England	234	403,195	1,524	418,732	68,948	92,235	4,893	128,456	12,024	306,556	73.21	112,176	7,380	104,796	171,675
Lehigh Valley	1,435	5,020,310	619,760	6,076,055	966,288	1,886,050	43,785	2,438,449	98,568	5,454,779	89.77	621,276	182,750	438,502	—706,232
Long Island	398	641,114	1,398,348	2,277,174	237,466	403,928	16,266	1,192,179	50,419	1,915,102	84.09	362,072	94,428	267,370	—520,269
Louisiana & Arkansas	302	128,640	43,516	178,369	58,639	58,639	45,709	3,132	6,880	180,163	101.01	—1,794	11,114	—12,908	9,555
Louisiana Railway & Navigation Co	340	252,366	36,847	298,961	92,201	60,710	5,265	105,549	7,916	271,640	90.86	27,322	18,000	9,296	74,975
Louisiana Western	201	206,425	101,497	328,626	58,156	93,316	3,721	94,442	10,481	262,560	79.89	66,066	8,778	57,274	—34,969
Louisville & Nashville	5,013	7,174,693	2,156,065	9,846,324	1,451,534	3,205,385	136,680	3,647,933	191,868	8,670,824	88.06	1,175,499	260,773	914,351	—871,920
Louisville, Henderson & St. Louis	199	177,618	70,927	265,067	48,177	31,895	4,363	79,713	8,696	172,845	65.21	92,222	4,000	87,988	—20,267
Maine Central	1,216	964,793	512,131	1,603,178	252,764	469,508	12,817	767,446	36,773	1,549,990	96.68	53,188	75,623	—22,517	—242,173
Maryland, Delaware & Virginia	82	80,690	58,714	143,218	6,820	20,206	806	77,525	2,370	107,728	75.22	35,490	1,894	33,596	14,527
Michigan Central	1,361	5,086,056	1,872,809	7,707,649	759,114	1,627,399	67,343	2,479,249	103,672	5,116,771	66.38	2,590,877	285,000	2,305,255	830,021
Mineral Range	101	55,890	203	56,829	15,191	23,275	271	23,843	939	63,230	111.26	—6,401	3,500	—9,901	—31,060
Minneapolis & St. Louis	1,646	1,052,018	254,086	1,371,679	233,097	335,796	11,615	559,839	30,443	1,171,676	85.41	200,003	48,102	151,880	—28,289
Minn., St. Paul & Sault Ste. Marie	4,243	3,077,225	830,438	4,186,108	574,893	826,892	23,917	1,514,776	78,885	3,040,960	72.64	1,145,147	251,337	893,756	418,832
Miss. Central	164	45,011	27,322	75,947	25,697	30,348	1,068	33,625	6,145	96,883	127.56	—20,936	2,801	—23,736	—65,069
Missouri & North Arkansas	365	160,689	50,581	159,897	44,678	41,284	2,835	63,582	9,440	161,769	101.17	—1,872	6,242	—8,262	—5,416
Missouri, Kansas & Texas R. R.	1,713	2,321,135	769,001	3,291,043	546,349	868,891	39,622	990,860	82,624	2,546,382	77.37	744,660	113,334	631,051	—173,378
Missouri, Kansas & Texas of Texas	1,796	1,446,423	823,916	2,429,787	503,693	500,244	29,296	1,204,482	80,443	2,336,034	96.14	93,753	83,094	10,130	—30,854
Missouri, Oklahoma & Gulf	332	110,902	20,431	139,709	68,565	66,718	2,114	76,017	6,710	220,374	157.73	—80,665	8,500	—89,461	—86,251
Misosuri Pacific	7,301	6,641,727	1,874,176	9,093,853	1,733,435	2,190,124	83,758	3,360,984	21,017	7,618,400	83.77	1,475,452	277,373	1,195,904	—510,724
Montour	54	.....	126,328	130,889	32,842	56,343	1,228	37,307	6,803	134,530	102.77	—3,640	1,936	—5,576	—36,240
Mobile & Ohio	997	1,131,319	193,131	1,405,149	277,516	469,761	26,353	615,156	52,638	1,441,896	102.62	—36,747	45,000	—81,831	91,391
Monongahela	108	280,517	21,255	308,137	47,041	48,115	951	97,356	6,473	199,937	64.88	108,200	5,000	103,200	8,546
Monongahela Connecting	6	.....	.....	183,418	31,897	59,069	511	54,344	7,311	183,133	99.84	286	1,543	—1,258	—52,852
Morgan's Louisiana & Texas R. R.	400	410,216	161,618	617,406	169,309	179,484	8,653	230,000	19,440	608,535	98.56	8,871	29,796	—20,963	12,937
Nashville, Chattanooga & St. Louis	1,247	1,315,206	482,125	1,908,985	292,140	469,464	39,478	742,604	42,420	1,593,108	83.45	315,878	50,000	265,788	185,934
Nevada Northern	168	105,593	9,174	126,277	27,419	22,194	1,145	37,972	3,594	92,339	73.12	33,937	22,223	11,715	—111,939
New Orleans & N. E.	196	368,857	115,909	546,204	176,384	171,798	6,651	228,694	14,486	602,747	110.35	—56,543	28,357	—85,164	—145,881
New Orleans Great Northern	284	147,042	46,169	200,832	39,923	52,143	2,602	70,341	9,915	175,381	87.32	25,452	9,000	16,382	—2,813
New Orleans, Texas & Mexico	191	137,919	40,933	184,867	44,606	54,079	2,711	61,780	6,413	172,035	93.05	12,832	10,000	2,709	—17,528
New York Central	6,075	18,172,686	7,821,872	29,486,945	3,740,177	7,167,675	249,399	10,783,311	646,832	23,000,499	78.00	6,486,446	1,058,199	5,427,610	—3,866,162
New York, Chicago & St. Louis	574	1,864,157	133,043	2,067,197	217,601	440,236	23,818	760,269	54,749	1,499,950	72.55	567,246	30,000	537,201	90,171
New York, New Haven & Hartford	1,965	4,888,592	4,162,241	10,216,559	1,275,056	2,399,861	50,529	4,262,752	267,758	8,409,024	82.30	1,807,535	392,000	1,412,778	—1,173,517
New York, Ontario & Western	569	536,550	256,737	953,330	167,880	253,331	10,392	441,473	21,121	894,199	93.79	59,131	30,000	29,131	—17,864
New York, Philadelphia & Norfolk	121	615,091	105,021	770,772	63,109	237,557	9,404	326,834	11,462	667,804	86.64	102,969	18,962	83,990	—64,805
New York, Susquehanna & Western	135	223,600	65,328	323,747	52,405	81,043	2,948	183,153	7,587	327,136	101.04	—3,389	37,111	—40,509	—57,311
Newburgh & South Shore	7	.....	.....	63,197	15,315	23,392	.....	44,819	5,038	88,563	140.13	—25,366	5,216	—30,582	—73,793
Norfolk Southern	906	379,255	172,795	590,162	125,326	131,050	7,308	240,462	20,617	524,936	88.94	65,226	16,010	48,949	—2,155
Norfolk & Western	2,088	6,048,285	1,002,049	7,348,329	912,066	2,598,916	39,173	2,437,148	116,400	6,124,107	83.34	1,224,220	260,000	463,967	—1,013,911
Northern Pacific	6,610	6,869,237	2,127,281	9,739,959	1,380,627	2,068,531	49,500	3,350,430	189,125	7,163,141	73.54	2,576,817	719,153	1,852,915	—488,001
Northern Alabama	112	94,386	13,316	109,424	34,566	7,173	1,599	50,524	1,604	95,453	87.23	13,971	3,400	10,563	—53,360
Northwestern Pacific	538	353,178	209,357	628,741	109,569	77,891	4,225	251,031	15,337	460,237	73.19	168,505	25,424	142,680	—49,664
Oregon Short Line	2,347	2,998,946	679,070	3,852,205	239,060	725,749	17,228	1,039,669	118,997	2,251,613	58.44	1,600,592	172,005	1,428,056	268,023
Oregon, Washington Navigation Co	2,070	1,917,153	686,927	2,789,325	417,283	471,086	32,699	993,844	105,169	2,040,939	73.16	748,386	113,614	634,593	164,183

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF SEPTEMBER, 1919—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
Panhandle & Santa Fe	772	503,902	137,453	670,346	68,192	252,061	4,578	240,651	14,182	579,572	86.45	96,774	20,895	69,709	193,672
Pennsylvania Railroad, West	1,754	7,530,695	1,998,732	10,401,552	1,263,791	3,103,966	83,454	4,004,758	207,770	8,754,927	84.16	1,646,625	307,001	1,338,761	314,437
Pennsylvania Railroad, East	5,367	23,544,057	16,265,724	36,906,615	4,831,180	11,831,056	284,111	15,376,303	746,346	33,695,344	91.29	3,211,271	881,016	2,324,401	—1,674,875
Perkiomen	41	87,086	11,020	101,419	8,398	4,075	17	38,447	607	51,562	50.84	49,857	1,800	48,057	—41,598
Peoria & Pekin Union	19	20,132	3,792	99,556	19,888	72,912	595	68,813	5,469	167,678	168.43	—68,128	9,500	—77,628	—47,836
Pere Marquette	2,230	2,457,427	615,201	3,321,641	215,750	738,575	25,834	1,274,959	55,168	2,321,609	69.66	1,011,031	61,993	948,787	265,654
Philadelphia & Reading	1,127	5,700,845	861,309	6,954,896	742,156	2,002,494	40,693	2,900,677	143,127	5,846,083	84.05	1,108,813	143,229	865,573	—909,668
Pittsburgh & Lage Erie	224	2,278,233	244,015	2,695,503	197,844	897,956	13,502	910,009	44,033	2,064,097	76.57	631,406	72,000	559,406	—858,142
Pittsburgh & West Virginia	63	109,689	9,660	128,670	28,916	56,627	1,644	56,832	6,605	159,592	124.03	—30,922	13,460	—44,382	1,234
Philadelphia, Bethlehem & N. E.	71	.....	.....	69,890	7,187	10,975	421	54,062	1,115	73,761	105.53	—3,871	1,110	—4,981	—18,538
Pittsburgh & Shawmut	103	111,128	4,499	116,313	31,963	36,059	1,628	37,698	2,971	110,320	94.84	5,993	973	5,019	638
Pittsburgh, Cincinnati, Chicago & St. L.	2,383	6,308,470	2,148,648	9,079,693	1,283,488	2,929,683	94,627	3,617,033	191,469	8,199,403	90.30	880,921	241,239	638,559	440,954
Pittsburgh, Shawmut & Northern	204	111,507	6,577	121,432	28,092	63,364	1,034	48,738	5,647	146,881	120.95	—25,449	1,892	—27,341	—30,309
Port Reading	21	140,583	.....	218,348	20,958	9,665	18	90,246	3,056	123,943	56.76	94,405	9,000	85,405	—50,758
Richmond, Fed. & Pot	81	257,028	265,647	598,934	43,359	108,458	4,056	213,027	13,241	395,703	66.06	203,231	13,135	190,094	—303,144
Quincy, Omaha & Kansas City	255	66,480	26,735	100,824	36,617	21,723	300	57,059	879	115,860	114.91	—15,036	3,053	—18,088	43,181
Rutland	415	223,904	149,335	453,720	76,335	101,811	5,073	194,716	12,241	391,871	86.36	61,849	19,944	41,906	—43,398
St. Joseph & Grand Island	258	211,809	44,812	272,513	53,687	59,526	2,107	117,849	12,960	246,130	90.31	26,383	11,856	14,510	22,331
St. Louis, Brownsville & Mexico	548	306,983	174,039	512,726	112,387	83,247	7,326	127,778	16,101	346,838	67.64	165,888	10,000	155,673	—72,845
St. Louis, Merchants Bridge Terminal	9	.....	642	336,038	49,459	41,899	752	195,651	5,990	293,751	87.41	42,287	8,000	34,286	34,956
St. Louis-San Francisco	4,761	4,944,936	2,118,016	7,452,641	989,186	1,477,763	58,636	2,518,325	153,647	5,194,030	69.69	2,258,611	196,310	2,060,088	—266,176
St. Louis, San Francisco & Texas	134	86,822	21,869	116,853	30,441	133,676	1,632	71,639	5,979	143,369	122.69	—26,515	1,629	—28,144	—81,063
St. Louis Southwestern	939	990,646	201,543	1,260,501	195,303	264,394	14,994	327,575	52,953	859,726	68.21	406,774	37,777	362,954	61,802
St. Louis Southwestern of Texas	814	456,149	142,064	641,353	152,758	199,107	9,350	305,734	23,403	690,918	107.72	—49,564	21,000	—70,578	43,062
San Antonio & Aransas Pass	936	286,295	147,042	458,832	123,915	119,423	6,156	216,120	16,143	481,593	104.96	—22,762	15,000	—38,523	—110,381
Seaboard Air Line	3,563	1,967,638	893,354	3,161,083	556,306	823,821	60,531	1,498,708	100,330	3,065,146	96.96	95,936	135,000	—39,186	—967,868
St. Louis Transfer	6	.....	.....	129,129	12,621	11,226	182	42,137	1,887	68,054	52.70	61,075	100	60,975	46,299
South Buffalo	11	31,863	.....	57,062	7,794	17,052	451	35,265	1,587	62,149	108.91	—5,687	3,666	—8,754	—12,036
Southern	6,982	7,174,232	3,009,398	11,317,590	2,356,749	2,543,032	136,565	4,627,260	279,608	10,052,436	88.82	1,265,153	341,791	916,312	—3,804,190
Southern Railway in Mississippi	278	93,586	51,056	155,062	39,509	22,327	2,982	76,626	4,135	145,579	93.88	9,484	9,000	427	721
Southern Pacific Steamship Lines	....	840,533	66,000	955,617	13,673	218,398	14,283	816,360	28,410	1,091,124	114.18	—135,507	9,966	—145,487	127,150
Spokane, Portland & Seattle	538	443,855	179,215	669,870	88,967	90,230	6,709	211,905	21,383	422,473	63.07	247,397	59,200	188,090	30,611
Southern Pacific	7,049	11,103,263	4,233,540	16,588,993	1,633,921	3,222,011	156,683	5,622,468	249,291	11,195,316	69.48	5,393,677	725,443	4,667,067	—103,511
Spokane International	156	103,589	19,772	125,819	18,161	10,201	1,952	36,895	4,439	71,473	56.31	54,340	4,012	50,328	22,571
Staten Island Rapid Transit	23	88,783	82,711	192,149	28,776	35,052	1,023	100,247	9,652	174,750	90.94	17,398	17,000	398	—31,852
Tennessee Central	292	146,526	55,674	213,834	72,471	59,058	3,399	103,069	6,214	244,236	114.51	—30,402	4,960	—35,368	12,568
Terminal R. R. Assn. of St. Louis	36	.....	3,931	390,684	67,385	52,915	854	149,599	3,918	278,079	71.17	112,604	30,750	81,712	26,004
Texarkana & Ft. Smith	87	116,769	18,962	146,691	21,947	18,804	51,632	52,123	3,017	97,234	66.28	49,458	6,616	42,850	29,871
Texas & New Orleans	469	459,494	175,055	702,658	105,151	242,166	3,521	238,268	13,545	636,143	90.53	66,515	21,256	44,998	402,078
Texas Pacific	1,946	2,006,838	1,126,420	3,340,274	482,822	785,242	24,602	1,187,426	66,946	2,581,466	77.28	758,808	100,000	657,339	276,453
Toledo & Ohio Central	435	857,490	74,731	992,381	136,289	277,218	6,704	388,333	16,219	827,653	83.40	164,728	32,034	132,682	264,430
Toledo, Peoria & Western	247	76,438	53,324	137,701	22,219	39,135	1,653	72,987	4,798	140,719	102.19	—3,019	8,500	—11,519	6,582
Toledo, St. L. & Western	454	771,782	36,840	853,699	188,725	208,669	6,567	305,856	11,631	720,659	84.41	133,040	26,000	107,040	134,634
Trinity & Brazos Valley	368	118,000	23,855	149,148	56,570	56,273	1,918	56,436	7,138	172,337	115.54	—23,188	5,714	—28,903	59,649
Ulster & Delaware	128	66,014	69,406	156,797	21,165	20,011	1,245	69,905	5,509	118,322	75.46	38,474	4,800	33,675	42,347
Union R. R. of Pennsylvania	40	.....	.....	654,588	80,228	150,082	80,249	352,988	7,523	591,070	90.28	63,518	8,281	55,236	—216,831
Union Pacific	3,614	8,496,929	2,164,698	11,452,999	1,130,798	2,056,807	45,368	2,806,187	248,821	6,513,178	56.86	4,939,821	284,385	4,654,353	—84,492
Vicksburg, Shreveport & Pacific	171	191,128	79,847	296,684	44,390	62,758	2,336	97,331	8,273	218,251	73.56	78,434	15,734	62,925	13,789
Virginian Ry.	523	1,091,202	69,295	1,280,080	173,015	200,796	3,953	387,854	16,627	784,381	61.27	495,690	24,500	471,199	128,409
Wabash	2,505	3,406,734	929,813	4,634,277	832,142	1,045,973	57,782	1,958,639	115,644	4,036,645	87.10	597,632	112,091	485,470	—71,158
Washington Southern	35	88,498	181,821	341,168	33,210	51,278	1,920	117,151	6,846	216,468	63.45	124,701	6,379	118,322	—108,126
West Jersey & Seashore	361	332,200	835,814	1,248,189	175,599	308,776	9,666	568,737	21,388	1,089,312	87.27	158,877	52,025	106,838	—33,744
Wichita Falls & N. W.	328	188,272	55,674	252,745	71,919	28,343	1,493	127,293	6,751	235,800	93.29	16,945	9,908	6,881	34,877
Western Maryland	688	1,310,074	100,449	1,542,747	275,684	514,232	18,690	492,389	50,504	1,366,761	88.59	175,986	43,200	132,786	323,633
Western Pacific	1,041	1,199,502	177,894	1,433,015	161,608	198,130	1,644	404,470	25,208	829,505	57.88	603,509	50,911	552,556	232,081
Western Ry. of Alabama	133	107,884	62,187	190,750	122,548	44,337	43,095	65,284	5,178	144,862	75.94	45,887	7,500	38,386	—100,389
Wheeling & Lake Erie	511	1,052,006	59,221	1,237,697	236,405	352,522	7,044	454,766	21,072	1,074,678	86.82	163,019	61,900	100,921	—238,709
Yazoo & Mississippi	1,381	1,890,781	469,528	2,462,013	362,106	603,945	15,918	716,381	45,441	1,743,960	70.83	718,054	64,564	653,111	51,883
Lake Erie & Ishpeming	34	173,112	200	195,755	20,869	14,720	212	32,111	2,479	70,411	35.96	125,344	3,871	121,472	—43,704
Copper Range	141	73,085	13,084	90,512	32,455	27,404	1,588	37,019	2,769	101,235	111.85	—10,722	6,526	—17,248	—5,034
Utah Ry.	98	140,567	498	139,560	22,834	24,367	169	27,078	2,397	76,845	55.06	62,715	4,072	58,643	1,445
Green Bay & West	252	93,763	17,050	117,933	29,858	33,514	927	41,139	1,895	107,331	91.01	10,602	4,390	6,212	—10,521
Los Angeles & Salt Lake	1,168	951,547	415,188	1,472,350	101,082	351,167	21,051	495,672	31,863	1,043,279	70.85	429,071	71,431	357,497	—108,291
Midland Valley	388	239,208	87,356	339,245	92,737	82,530	7,480	131,491	17,720	331,958	97.85	7,287	6,786	404	—84,039
Minn. & International	194	46,503	25,957	77,528	241,257	21,316	472	39,675	3,217	88,937	114.71	—11,408	5,880	—17,289	6,968

Commission and Court News

State Commissions

The Railroad Commission of Louisiana, acting on complaint of land owners, well contractors, and others interested in the Harmon-Bayou oil field, has ordered the Texas & Pacific to put on an additional passenger train between Shreveport, La., and Gahagan, 47 miles. The railroad objected, arguing that automobiles would take much of the traffic to and from these oil fields, but the commission held that poor roads would make automobile traffic impracticable in the winter season. Heretofore there has been one train a day between these points, and many of the patrons of the road were obliged to take two days for a round trip.

Personnel of Commissions

Edgar E. Clark has been nominated by the President for reappointment as a member of the Interstate Commerce Commission.

James H. Wilkerson, a member of the Illinois Public Utilities Commission, has been appointed chairman of that body, succeeding Thomas E. Dempcy. Mr. Dempcy has resigned as chairman because of ill health, but retains his membership in the Commission.

The Department of Public Utilities, of Massachusetts, succeeding to the functions of the Public Service Commission, consists of five members, and the chairman is Henry C. Attwill, who has been appointed commissioner for a term of five years. The other appointments for four, three, two years, and one year, respectively, are E. E. Stone, A. R. Weed, D. A. Ellis and H. G. Wells. Messrs. Attwill and Stone were members of the Public Service Commission. Under the reorganization which took effect December 1, under a law passed this year, this department will take up the work of the gas and electric light commission. Under the new organization the chairman will have a salary of $8,000 a year, and each of the other four members will have $7,000. The new chairman was formerly attorney general of the state. The former chairman of the Public Service Commission, F. J. MacLeod, is now out of office.

Court News

Fraud of Railroad's Agents by Overcharges

Although there is a presumption that knowledge of an agent is that of the principal, that presumption does not apply where the agent is engaged in a scheme to defraud his principal. Therefore the Circuit Court of Appeals, Eighth Circuit, holds that a railroad company will not be charged with a scheme between its station agent and an employee of a shipper whereby freight in a greater amount than was earned was collected, and the two divided the surplus.—Scullin Steel Co. v. North American Co., 255 Fed. 945.

Excessive Valuation for Taxation

The Illinois Supreme Court holds that where the railway committee of the State Board of Equalization arbitrarily increased the assessed valuation of certain railway property by fixing it at six times the valuation returned by the railroad and such valuation was arbitrarily approved by the board under suspension of the rules, the railroad's objection as to five-sixths of the tax should have been sustained.—People v. Chicago, Lake Shore & Eastern, 286 Ill. 576, 122 N. E. 109.

Federal Employers' Liability Act—Assumption of Risk

The Circuit Court of Appeals, Second Circuit, holds that an interstate commerce employee, of experience, who after refusal of a light, and without assurance of safety or a light forthcoming in a reasonable time, continues to work in the dark removing a metal platform which had been used as a passageway between freight cars on parallel tracks, must be held to have assumed the risk. It is only risk of employment from violation by the master of a federal statute which the employee is not held to assume under the federal Employers' Liability Act.—D. L. & W. v. Tomasco, 256 Fed. 14.

Standing Cars Not Attractive Nuisances

While the doctrine of the "attractive nuisance," or of the so-called "turntable cases," has been accepted in the state of Missouri, the Supreme Court of that state holds that a standard gage railroad flat car of light construction on a side track, unbraked and unlocked, requiring from 6 to 8 boys from 9 to 13 years of age to move it was not within the attractive nuisance rule as to a 10-year-old child, caught between the car and an adjacent pile of construction material while the car was being moved by children. The danger is obvious, like that from fire or water, and not latent.—Buddy v. Union Terminal (Mo.), 207 S. W. 821.

Change in Passenger Rates—Ejection from Drawing Room

Suit was brought by a passenger for ejectment from the drawing room of a Pullman car. He was informed when he bought a first-class ticket from Reno to Tonopah and when he entered the train that under the railroad's rules he could not occupy the drawing room unless another person holding a first-class ticket occupied it with him, or unless he bought another first-class ticket. He said that he expected a friend to occupy it with him. During the night, no one else having appeared with the required ticket, the conductor awoke him and informed him that he would have to vacate the drawing room or pay for another first-class ticket. After discussion, and against his will, he was ejected from the drawing room. The sole question in the case was whether the railroad was justified in ejecting him. For a long time the company had permitted a passenger holding one first-class ticket between Reno and Tonopah to occupy the drawing room, but some time prior to the date of the plaintiff's ejection the company had changed its tariff so as to require two passage tickets for use of a drawing room. It was held that the change in tariff had been properly made and it was lawful to eject the plaintiff.—Crumley v. Southern Pac. (Nev.), 177 Pac. 17.

Apportionment of Cost of Crossing and Interlocking

The Washington Supreme Court affirmed an order of the State Public Service Commission apportioning the cost of crossing of the track of the Northern Pacific by the Tacoma Eastern (the railroads having been unable to agree thereon) as follows: the cost of the grading, of the frogs, and the installment thereof to be borne entirely by the Tacoma Eastern; the cost of the interlocking plant and its installation, one-third by the Northern Pacific and two-thirds by the Tacoma Eastern; maintenance of the whole to be borne in equal proportions by the two companies. The court held, at the same time, that, the necessity for the crossing being found, there can be no favor shown the company whose line is crossed merely because it is a pioneer company. If, when a petition is filed for permission to cross an existing road, the State grants the right to cross, all questions of prior right or occupancy of the ground must give way, for the order is a finding by the sovereign state that the need of the public demands two roads instead of one, and the order ipso facto forecloses all questions of seniority or priority between the contending roads. In this the court followed State ex rel. Puget Sound & Willipa Harbor v. Northern Pacific, 94 Wash. 10, where it was held, contrary to former holdings of the Washington Supreme Court, that it was within the power of the legislature to apportion the cost of a crossing and interlocking devices between the two companies. State ex rel. Tacoma Eastern v. Northern Pacific (Wash.) 176 Pac. 539.

Foreign Railway News

LONDON.

Railway Construction in Madagascar.—According to the London Times Trade Supplement, railways lines are being built from Antsirable to Tamatave on the east coast, and from the famous lake of Alaotra to Majunga.

A strike of employees of the Central Railway of Peru, which had caused a suspension of traffic for eight days, was settled on September 27. According to press despatches the strikers were granted all of their demands, the government having authorized an increase of freight rates to cover the addition to the payrolls.

Railway Communication Between Rome and Athens

Italy and Greece have signed a convention providing for railway communication between Rome and Athens, with a ferry from Otranto to Valona.

New Alpine Tunnel

French and Italian engineers lately arrived at Salanches to reconsider plans made by the engineer, M. Monod, in 1908, for piercing Mont Blanc with a new railway line from Salanches, on the Swiss side of the frontier, to Aosta, in Italy. The new line will be 50 miles long, with a tunnel 9 miles in length, similar to the famous Simplon tunnel. It is expected that work on the new undertaking will begin next spring.

Electrification in Chile

The London Times Trade Supplement states that the government of Chile has decided to electrify all railways under State control, utilizing for this purpose the abundant water power available from falls of the western slopes of the Andes. The State railways, administered from Santiago, comprise about 2,300 miles projected or under construction; they include the Longitudinal Railway, the Arica-La Paz, the Copiapo, and branches, the line to Coquimbo and branches, the Los Vilos line and the Central system.

Deficit on Paris Metropolitaine Railway

LONDON.

An extract from the Engineer states that during the year 1918, there were a dozen stations on the Paris Metropolitaine at each of which over six million tickets were sold. Among these were: Vincennes 11¼ millions, Porte Maillot 10 millions, Bastille 9¾ millions, Gare du Nord 9¼ millions, Gare de l'Est 9 millions. While the total receipts increased by 3½ million francs, the expenditure rose by 12½ million francs, and the receipts were not sufficient to pay the fixed charges, there being a deficit of three million francs. In 1913 the ratio of expenditure to receipts was 42.79 per cent, in 1916 it was 47.14 per cent, in 1917, 50.93 per cent, but last year it was 61.28 per cent.

Some Figures Regarding Great Britain's Railways

LONDON.

An article in the Times Trade Supplement states that there is in Great Britain some 23,500 miles of railway, and reckoned in single track, including the length of sidings, the total mileage in operation is in round figures 55,000 miles. The total length of running track included in this total is over 40,000 miles. The number of passenger journeys made in the last year of normal conditions was approximately 1,233,000,000, which produced a revenue of about £54,250,000. The amount of goods traffic was 372,037,000 tons. The engine mileage of loaded trains was 405,300,000, and the shunting mileage 137,865,000, the total engine mileage, including the haulage of empty trains, being 628,324,000.

New Scale of Pay for English Railway Clerks

LONDON.

An extract from the Engineer states that under the new scheme of pay for railway clerks, station masters, agents, etc., arranged between the Railway Excutive Committee, the Railway Clerks' Association and the National Union of Railwaymen, clerks engaged continuously on night duty re-commencing before 4 a. m., or ceasing after 10 p. m., are to be relieved where possible, one turn of duty every ten nights. When it is not possible to find the relief, an extra day's pay is to be given. Clerks continuously working on a middle turn, that is, when the hours of duty fall between 8 a. m. and 6 p. m., are to have a weekly half-holiday.

Station masters, too, are to have a half-holiday. Twelve days' holiday is given to all and in some of the higher grades 15 and 18 days.

Considering New Wage Demands in France

LONDON.

The London Times of October 8, published a cable from Reuter, Paris, in which it is stated that the permanent commission of railwaymen employed on the Paris-Etat lines has addressed a note to all unions and groups of French railwaymen inviting them to take an urgent decision with regard to a proposal to demand a new rise of wages of 100 per cent plus present bonuses, with a minimum wage of 800 francs per month. The note adds that the commission is also anxious to have within a period of ten days the opinion of the unions on such questions as intervention in Russia, the amnesty, definite recognition of syndical organizations, etc. This initiative has apparently been taken by the Paris-Etat group on its own responsibility and outside the National Federation of Railwaymen, which has not even been consulted.

New French Plan of Railroad Control

A decree has been issued, says a press despatch from Paris, instituting the "Committee of Exploitation" to have control of the railroads in France. This is in accordance with the plan of M. Claveille, minister of public works, which provides for the collaboration of representatives from the different classes of railway workers with the heads of departments and directors in the management of the roads.

The committee will comprise a high official of each line as president, the operating managers of all the lines, three representatives of commerce and industry designated by the minister of public works and three representatives of the employees, also designated by the minister.

A technical committee has also been instituted to supervise the rolling stock. This is composed of the chief engineers of all the lines, three manufacturers of railroad material and three representatives of the employees appointed by the minister of public works.

A representative of the government will attend the meetings of the committees, and his assent will be necessary for the execution of exceptional measures.

Railway Traffic Needs of Danish Island

LONDON.

The Times Engineering Supplement states that the demand for railway bridges across the Little Belt, between the Island of Funen and Jutland, and across the Storstrom between the islands of Sjelland and Falster, as a link in the Danish-German railway traffic, has of late been pressed in an increasingly urgent manner, and the director general of the Danish state railways has now promised that measures for their construction shall be laid before the Danish Legislature in the course of the next session, if the plans are ready in time.

Some interesting figures in connection with the traffic across the two waters in question are available. The steam ferry traffic across the Little Belt in 1893 was 110,000 tons of freight; in 1913 this rose to 562,000 tons and in 1917 to 880,000 tons. The passenger traffic was 222,000 in 1893, 598,000 in 1913, and 713,000 in 1917, and the actual expense of the ferry traffic, exclusive of interest on cost of material and harbors, repairs, etc., rose from 144,000 krone ($38,000) in 1893, to 393,000 krone ($98,250) in

1913, and 873,000 krone ($218,250) in 1917. A bridge across the Little Belt it is argued would greatly enhance the practical capacity of the rolling-stock now stationed in the Island of Funen, and at the same time would save time, increase the comfort of passengers and facilitate traffic.

Special Correspondence From South Africa

JOHANNESBURG, September 8.

Considerable progress has been made towards the complete application of the eight-hour working day for Railway and Harbor servants. From April 30 to August 7, 12,000 additional servants of the Administration were placed on the 48-hour week. On August 7, 28,000 of the European staff in service at that date were working 48 hours or less and 9,000 more than 48 hours a week. More than 800 additional learners have been taken on in connection with this change and in addition a very large number of railway servants returned from active service have been absorbed. The Administration has decided that all daily-paid employees in the grades to which the 48-hour week will be applied—that is, the whole of the daily-paid staff, with very few exceptions—will be paid on the 48-hour week basis as from the beginning of January, 1920, pay month.

The question of electrifying certain sections of the South African Railway System is being vigorously inquired into by Charles Merz, of the firm of Merz & McLellan, who is at present in this country. He will report to the Union Government in this connection in due course, as well as in regard to the generation of electrical power in South Africa generally.

The proposal for the establishment of a Union owned line of steamers is being received with general acclamation. Already three of the boats captured in South African waters are in commission, one of these being engaged in coal bunkering trade between East London and Durban.

Owing to the necessity of withdrawing a considerable number of trucks from general traffic for the conveyance of coal to the ports, coupled with the already sadly depleted available railway material, traffic on the South African Railways has been affected most acutely lately. Durban requires at least 60,000 tons of coal, while the ships at Delagoa Bay, or due there within the next week or so, will want another 50,000 tons to be supplied. Cape Town also requires an additional quantity of this commodity. To relieve the position no other course was open than to utilize trucks employed in the carriage of general goods. Fortunately the inconvenience is only of a temporary nature, every nerve being strained to meet the situation. The position is due largely to the arrival of more transports and other ships than anticipated. Exclusive of coal for locomotives and railway workshops—something like 150,000 tons per annum—the traffic conveyed by the South African Railways has since the outbreak of the war increased by at least 2,000,000 tons per annum, last year's quantity having been approximately 14,000,000 tons. To cope with this increased volume of traffic besides meeting other requirements 4,000 wagons have been on order for some time past already, 2,500 of these being for livestock and sheep, but also suitable for coal traffic and general purposes. There are also included in the former number 200 insulated and refrigerator trucks of the latest pattern for the carriage of meat and other perishables. The need of additional engine power is most pronounced. At the beginning of the year there were 174 engines on order and of these 29 only are in service, while another 20 have arrived and are being assembled in the railway workshops. A further 66 are expected by the end of this year.

Equipment and Supplies

Locomotive Deliveries

The following locomotives were shipped during the week ended November 22:

Works	Road	Number	Type
American	MP	2	USRA Mount.
		2	
Baldwin	P&R	3	USRA Consol.
	LV	1	Santa Fe
		4	
Total		6	

Locomotives

THE SOROCOBANA RAILWAY, Brazil, has ordered 8 locomotives from the American Locomotive Company.

Freight Cars

THE SOROCOBANA RAILWAY, Brazil, is inquiring for 200 freight cars.

THE BAS CONGO-KATANGA, Belgian Congo, Africa, is inquiring for 80 box cars.

THE CENTRAL OF NEW JERSEY has bought 1,000 55-ton steel hopper cars from the Standard Steel Car Company.

THE CARNEGIE STEEL COMPANY is in the market for 40 tank cars of 10,000 gal. capacity and 27 tank cars of 15,000 gal. capacity.

THE AMERICAN LINSEED COMPANY, Woolworth Building, New York, has ordered 10 10,000 gal. tank cars from the Pennsylvania Tank Car Company.

THE CHILEAN EXPLORATION COMPANY, New York, reported in the *Railway Age* of October 10, as being in the market for 50 70-ton ore cars, has ordered this equipment from the Pressed Steel Car Company.

Miscellaneous

RODNEY D. CHIPP, United States representative, at New York, of the San Paulo-Rio Grande Railway Company and the Parana Railway, is in the market for 450 locomotive and tender tires; 450 truck and car springs; eight complete sets of mounted axles and wheels; 26,400 lb. of ingot copper; 26,400 lb. of ingot lead; 7,700 lb. of ingot tin; 1,320 lb. of ingot zinc; 1,320 lb. of ingot phosphor bronze; 100 tons of pig iron; 55 tons of refined iron in bars and sheets; 11 tons of steel bars and sheets; 1,320 lb. of high speed tool steel; also miscellaneous railway hardware, tool, etc., for the above railroads.

Locomotives Shipped in October

The Railroad Administration has compiled the following statement of locomotives shipped for the month of October, 1919.

		On order prior to Federal control		USRA orders		Constructed in railroad shops			
Name of road	Region	Type	No.	Type	No.	Type	No.	Total	Builders
B. & O.	Allegheny		..	USRA Pacific	4		..	4	American
C. C. & O.	Southern		..	USRA Mallet	6		..	6	Baldwin
K. C. S.	Southwestern		..	USRA Pacific	3		..	3	American
L. V.	Eastern	Santa Fe	7		..		..	7	Baldwin
N. & W.	Pocahontas	Mallet	3		..		..	3	Baldwin
Penn. R. R.	Allegheny		..		..	Pacific	4	4	Penn. R. R.
P. L. W.	Allegheny	Santa Fe	4	USRA Mikado	1		..	5	Baldwin
P. L. W.	Allegheny	Mallet	1		..		..	1	Baldwin
P. L. W.	Allegheny		..	USRA Mikado	4		..	4	American
P. L. W.	Allegheny		..	USRA Mikado	28		..	28	Lima
P. L. W.	Allegheny		..	USRA Santa Fe	5		..	5	American
P. & R.	Allegheny		..	USRA Consol.	5		..	5	Baldwin
S. A. L.	Southern		..	USRA Santa Fe	1		2	1	Baldwin
So. Pacific	Southwestern		..		..	Switch	2	2	So. Pacific
W. & L. E.	Eastern		..	USRA Mallet	3		..	3	Baldwin
Total			15		60		6	81	

Supply Trade News

H. S. Waterman, sales manager for the **Hutchins Car Roofing Company,** Detroit, Mich., died in that city on December 1, after an illness of 10 days.

W. D. Horton, district sales manager of the Patton Paint Company, has resigned to accept a position with the Murphy Varnish Company, Western Railway Department, with headquarters at Chicago, effective December 1. Mr. Horton was born in Brooklyn, N. Y., December 3, 1880, and was educated in the public schools of that city. On June 1, 1908 (at the time of the consolidation of the *Railway Age* and the Railroad Gazette) he joined its staff and from 1908 to 1914 acted as traveling subscription representative, on April 1, 1914, being appointed circulation manager. Mr. Horton has had a wide selling experience, having spent several years, previous to 1908, selling various commodities, such as stationary engines, boilers, wood-working and other machinery. In this work he traveled extensively throughout the United States, Canada, Mexico, Cuba, the West Indies, and in South and Central America. As circulation manager, he obtained a wide personal acquaintance among executive officers and department heads of nearly all the railways in the United States and Canada.

W. D. Horton

Westinghouse Air Brake Company Celebrates Fiftieth Anniversary

At the meeting of over 800 veterans of the Westinghouse Air Brake Company and its subsidiary companies at the William Penn Hotel at Pittsburgh, September 27, which was announced in our Emergency Bulletin of October 16 to celebrate the fiftieth anniversary of the formation of the company, A. L. Humphrey, president of the company, presided as toastmaster, and in commenting on the celebration, said: "Officials of our company realizing that September 28 marks the closing of 50 years of air brake development, as well as standing as a milestone in the remarkable growth of a Pittsburgh industry, debated a long time concerning a fitting method of recognition. We decided that the men themselves who had been with the founder, the late George Westinghouse, and others who had been associated with us for over 21 years, were justly entitled to the honor of the occasion. With this end in view we invited every employee of this company and its subsidiaries to a jubilee dinner at the William Penn Hotel. A large number of these men have seen the Air Brake Company expand from a modest beginning at the old Twenty-eighth street plant and in Wilmerding to its present size, and who is more interested in this day than they are?"

Veterans were present in large delegations from the National Brake & Electric Company, Milwaukee, Wis.; Pacific Coast Brake Company, Emeryville, Cal.; Canadian Westinghouse Company, Hamilton, Ont.; American Brake Company, St. Louis, Mo.; Locomotive Stoker Company, Pittsburgh, Pa., and Union Switch & Signal Company, Swissvale, Pa. On the same evening celebrations were also held in London, England, by the Westinghouse Brake Company, Ltd., of London; at Paris, France, by the Compagnie des Freins Westinghouse, Sevran, France, and at Turin, Italy, by the Compagnia Italiana Westinghouse dei Freni.

The first speaker of the evening at Pittsburgh was Thomas Kerr, New York, general patent solicitor of the Westinghouse Air Brake Company. As the office boy for a Pittsburgh attorney, Mr. Kerr witnessed the application for the fundamental Westinghouse air brake patent No. 88,929. H. H. Westinghouse, brother of the late George Westinghouse, spoke on "Westinghouse and Allied and Subsidiary Interests." E. M. Herr, president of the Westinghouse Electric & Manufacturing Company, and a member of the board of directors of the Westinghouse Air Brake Company, responded to the toast, "Our Husky Infant." Paul B. Cravath spoke on "Mr. George Westinghouse, As I Knew Him and His Achievements." Thomas Oakley, a machinist at the Wilmerding works, who has been in the service of the company continuously for over 35 years, spoke on "A Word to My Present and Future Co-workers."

Trade Publications

NICKEL.—For the purpose of briefly describing its nickel products, the International Nickel Company, New York, has published a small illustrated booklet. These products consist of nickel shot and ingots, electrolytic nickel, nickel oxides and nickel salts, for use in the manufacture of malleable nickel.

METALLIC PACKING.—A four-page folder, issued by Harry Vissering & Company, Inc., Chicago, describes and illustrates the construction of Crescent metallic packing for valve stems and piston rods of locomotives. This packing is made of four flexible pieces, all the joints overlapping, and is adapted for use with either saturated or superheated steam.

STEEL TREATING.—Detailed instructions for treating Colonial tool steel and tools have been compiled as the result of experience, by the Colonial Steel Company, Pittsburgh, Pa., and published in a booklet entitled The Colonial Tool Steel Treating Book. In addition to tre directions for hardening and treating, the book contains a complete list of tools with the grades of Colonial steel best adapted for their use, with a separate list of railroad tools.

HIGH SPEED AND ALLOY STEEL.—An attractive cloth bound book of 92 pages, 4 in. by 6 in., entitled Catalogue and Hints on Steel, is being distributed by the Halcomb Steel Company, Syracuse, N. Y. This catalogue contains a brief description of the company's various grades of crucible and electric tool and alloy steel and their uses, with instructions for treating. It also contains a large number of tables of useful information on areas, weights, etc.

HIGH TEMPERATURE CEMENT.—Hytempite, a material for bonding firebrick and kindred uses, which is manufactured by the Quigley Furnace Specialties Company, New York, is described in a pamphlet entitled Hytempite in the Foundry. This material can be used as a binder wherever fire clay, silica brick or tile are used, requiring no heat to effect a bond between materials joined. A number of applications of Hytempite in foundry work are described, with directions for applying the materials.

A "SHOCKLESS" CROSSING.—The Alexander Railroad Crossing & Equipment Company, Chicago, has issued a folder, entitled "Take the Shock Out of Your Crossings." In addition to describing and illustrating the swing rail construction of the crossing manufactured by this company, the folder discusses briefly the disadvantages of ordinary types of crossing construction and points out the highly satisfactory experience which a number of railroads have had with the Alexander crossing during ten years of actual service.

CASEHARDENING MATERIALS.—Bell & Gossett Company, Chicago, Ill., briefly describe several products manufactured by them for use in casehardening, in a pamphlet entitled Casehardening Materials. These specialties include a carbonizer known as Hi-Carbon Compound; B-G Compound for hardening, serving the same purpose as cyanide without giving off deadly fumes; Enamelite, which when applied to low carbon steel will prevent the steel from absorbing carbon during the casehardening process, producing soft areas where they are desirable; Bath-ite, a compound used for preheating between 1,200 and 1,600 deg. F., making it possible to heat the work to a uniform temperature away from the air in order to eliminate scale and oxidization, and Cleancoat, for scouring the steel heated in lead baths.

Railway Officers

Railroad Administration

Operating

C. E. Milliron has been appointed superintendent of dining car service with headquarters at Columbus, Ohio, succeeding **E. W. Westlake,** transferred to Chicago as supervisor of dining car service.

S. V. Rowland, has been discharged from military service and resumed his position as trainmaster on the Northern division of the Chicago Great Western, with headquarters at St. Paul, Minn., succeeding **E. J. Whalen,** who has been transferred.

Engineering and Rolling Stock

C. E. Trotter has been appointed master mechanic of the Lake Erie & Western, the Fort Wayne, Cincinnati & Louisville and the Northern Ohio at Lima, Ohio.

T. J. Mullin, general foreman shops of the Lake Erie & Western at Lima, Ohio, has been appointed shop superintendent of that road, as well as of the Fort Wayne, Cincinnati & Louisville and the Northern Ohio, with the same headquarters.

Purchasing

W. N. Pollard, division storekeeper of the Southern at Columbia, S. C., has been transferred to South Richmond, Va., succeeding **W. F. Lamb,** deceased; **J. H. Smith** has been appointed Mr. Pollard's successor.

Corporate

Operating

W. G. Curren, who has been appointed general superintendent of transportation of the Baltimore & Ohio, with headquarters at Baltimore, Md., succeeding **H. B. Voorhees,** promoted, was born in Webbs Mills, N. Y., and graduated from the high school there. In December, 1901, he entered railroad service as agent of the Northern Central, now part of the Pennsylvania. The following year he became trainmaster's clerk and secretary to the division superintendent of the Erie. In 1903, he was transferred to New York as secretary and chief clerk to the superintendent of transportation of the same road and later that year promoted to fast freight clerk. Three years after he was made night transportation clerk and later the same year passenger transportation clerk. Appointed general car distributor in 1906, he was promoted to inspector of transportation in 1908. In September of 1908 he went to the Kansas City Southern as chief clerk to the general superintendent and in November two years later became superintendent of car service. The Baltimore & Ohio appointed him assistant superintendent in 1912 and he was promoted that year to supervisor of transportation and later to the position of assistant to the general superintendent of transportation, with headquarters at Baltimore, Md. The next year he was transferred to Cincinnati, Ohio, with the Baltimore & Ohio, Lines West, including the Cincinnati, Hamilton & Dayton. In 1917 he was appointed superintendent of transportation of the Baltimore & Ohio and in 1918 transferred on furlough to the staff of the regional director of the Eastern region at New York City as special agent in charge of transportation. He was promoted to transportation assistant in 1919. He returned to the Baltimore & Ohio as general superintendent of transportation, as mentioned above, September 15 of the present year.

W. G. Curren

Executive, Financial, Legal and Accounting

John Duffy, assistant to F. L. Blendinger, federal manager of the Lehigh Valley, has been appointed assistant to **E. E. Loomis,** president.

J. L. Lancaster, federal manager of the Texas & Pacific, the Trans-Mississippi Terminal, the Weatherford, Mineral Wells & Northwestern, the Gulf Texas & Western, the Denison & Pacific Suburban, the Fort Worth Belt, the International & Great Northern, the Galveston, Houston & Henderson and the Houston & Brazos Valley, has been appointed receiver of the Texas & Pacific Railway Company. A successor will not be appointed for the remaining period of federal control but **A. G. Whittington** will be general manager of the International & Great Northern, the Galveston, Houston & Henderson and the Houston & Brazos Valley; and **J. A. Somerville,** general manager of the remaining lines. The general managers will have jurisdiction over all departments of the lines under their control, reporting to the regional director of the Southwestern region.

Engineering and Rolling Stock

Henry Gardner, supervisor material conservation of the Baltimore & Ohio, with headquarters at Baltimore, Md., has been appointed corporate mechanical engineer succeeding **Morgan K. Barnum,** notice of whose death appeared in the Railway Age of October 3 (page 722). Mr. Gardner was born in Salem, Mass., in 1872, and graduated from the Massachusetts Institute of Technology in 1896. Immediately after graduation he began railroad work as special apprentice of the Boston & Maine shops in Boston, Mass., at which work he remained until 1900 when he was appointed shop draftsman and inspector at Concord, N. H. During 1904 and part of 1905 he was assistant master mechanic at the same place. Between 1905 and 1911 he was respectively erecting shop foreman for the American Locomotive Company at Allegheny, Pa., locomotive designer for the H. K. Porter Company, Pittsburgh, Pa., assistant superintendent apprentices of the New York Central at New York City; and from 1911 to 1914 was superintendent apprentices and shop systems. In 1914 he went to the Baltimore & Ohio as assistant superintendent of shops at Baltimore and the following year was appointed special engineer in the office of the vice-president, at Baltimore also, an office he held until 1917 when he was chosen for the position he filled at the time of his recent appointment.

H. Gardner

EDITORIAL

Railway Age

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Rebuilding Obsolete Locomotives

The problem of disposing of locomotives when they become obsolete for through service is one for which no generally satisfactory solution has been found. On roads which have a proportionately large mileage of branch lines, small engines can be gradually retired by reassigning them from time to time on divisions having light traffic. This, however, represents an unusual condition. The majority of roads have more light locomotives than can be used to advantage, and the tonnage per train in through service is limited by the necessity for keping light power on important divisions. In considering such a condition, railroad managers are confronted with a dilemma; the cost of new equipment is extremely high, yet the operation of light power is wasteful as regards both fuel and wages. Many roads have added superheaters, brick arches and other devices on comparatively small engines. Such changes save fuel and also reduce wages by shortening the time trains are on the road. A rather unusual policy in the modernizing of power is that adopted by the Northern Pacific, as described elsewhere in this issue. This road has not only added devices to increase the efficiency of the engine, but has also taken advantage of the possibility of securing greater tractive effort by adding another pair of drivers and lengthening the boiler. The operating results secured from the rebuilt locomotives show the large savings that can be effected by a relatively small change in the design. Roads that have an overabundance of small power may well consider the advantages to be gained by converting locomotives to a heavier type, thereby increasing the capacity and postponing the time when they must be retired as obsolete and uneconomical.

The Coal Strike Muddle

NO OTHER INDUSTRY except that of coal mining itself is more affected by the coal strike than the railroad industry. The railroads are the largest consumers of coal and therefore the strike directly affects their operation. Coal constitutes the largest single class of their traffic and therefore a cessation of production speedily and seriously affects their earnings.

The immediate causes of the coal strike and the chaotic conditions, business and other, which have resulted from it are obvious. Everybody who has dealt directly with the matter has blundered. Probably there has never been committed a more perfect and unbroken series of blunders in the handling of any great industrial and public problem.

First, the mine operators, although they knew that the irregularity of employment in the mines was little short of barbarous and should have known that the ultimate result would be an explosion, did nothing constructive to remedy the conditions which caused this irregularity.

Second, the United Mine Workers demanded an increase of 60 per cent. in wages and the establishment of a maximum 30-hour week simply because, as they contended, miners were given opportunity to work an average of only 30 hours a week. In other words, they tried to capitalize the irregularity of their employment—which instead, should have been remedied—and in addition, tried to get an exhorbitant advance in wages.

Third, the United Mine Workers, before any conferences had been held with the operators, ordered a strike to begin on November 1 unless before that time all their demands had been complied with.

Fourth, the government officials have made one blunder after another. The Secretary of Labor publicly announced that the miners should have an advance in wages of 31 per cent. The operators offered 20 per cent, provided they should be allowed to advance prices. Fuel Administrator Garfield who, as this paper once before remarked, knows nothing about fuel and less about administration, decided, with the concurrence of the cabinet, that the miners should be offered only a 14 per cent advance, which should not be accompanied by any increase in the price of coal. Naturally, the miners were not disposed to accept 14 per cent after the operators had indicated they were entitled to 20 per cent and the Secretary of Labor had indicated they were entitled to 31 per cent.

Finally, the Department of Justice compelled the officers of the United Mine Workers to recall the order for a strike by proceeding under the Lever act, and having done this took no further steps to compel the miners to carry out the spirit as well as the letter of the order of the court. The Lever act was a war measure. The miners knew that the war was over. It is not very surprising that even the law-abiding men among them were not much disposed to obey a court mandate issued under a law passed to deal with a war emergency which had ceased to exist. It was probably a blunder to use the law at all. Having once used it, however, it was certainly a blunder not to use it effectively.

The result of this extraordinary series of outrages and blunders is, that the strike has been in effect since November 1, that there has been an enormous reduction in the supplies of coal on hand, that the country's business has been compelled largely to shut down, and that while industry and the people suffer government officials continue to play with legal and economic theories and conditions go from bad to worse. It is one of the ironies of the situation that at the very time when the Department of Justice was using the Lever law to break the strike, the President of the United States in his annual message pronounced the right of labor to strike inviolate!

Presumably, the country will finally, after great loss and suffering, muddle through the terrible situation which has been created by the recklessness of some people and the stupidity of others. There is much talk of applying the principle of compulsory arbitration to the coal mines, of smashing unions, and so on. Certainly, the situation existing does raise in a very serious form the question whether the increase of the great labor unions in numbers and in power, and the growth of radicalism in their ranks, are not beginning to constitute a danger of the first magnitude to the industrial and political institutions of the country. It seems evident that if the great labor organizations continue to take the country by the throat and try to choke it into submission to their wishes, as they have been doing within recent months,